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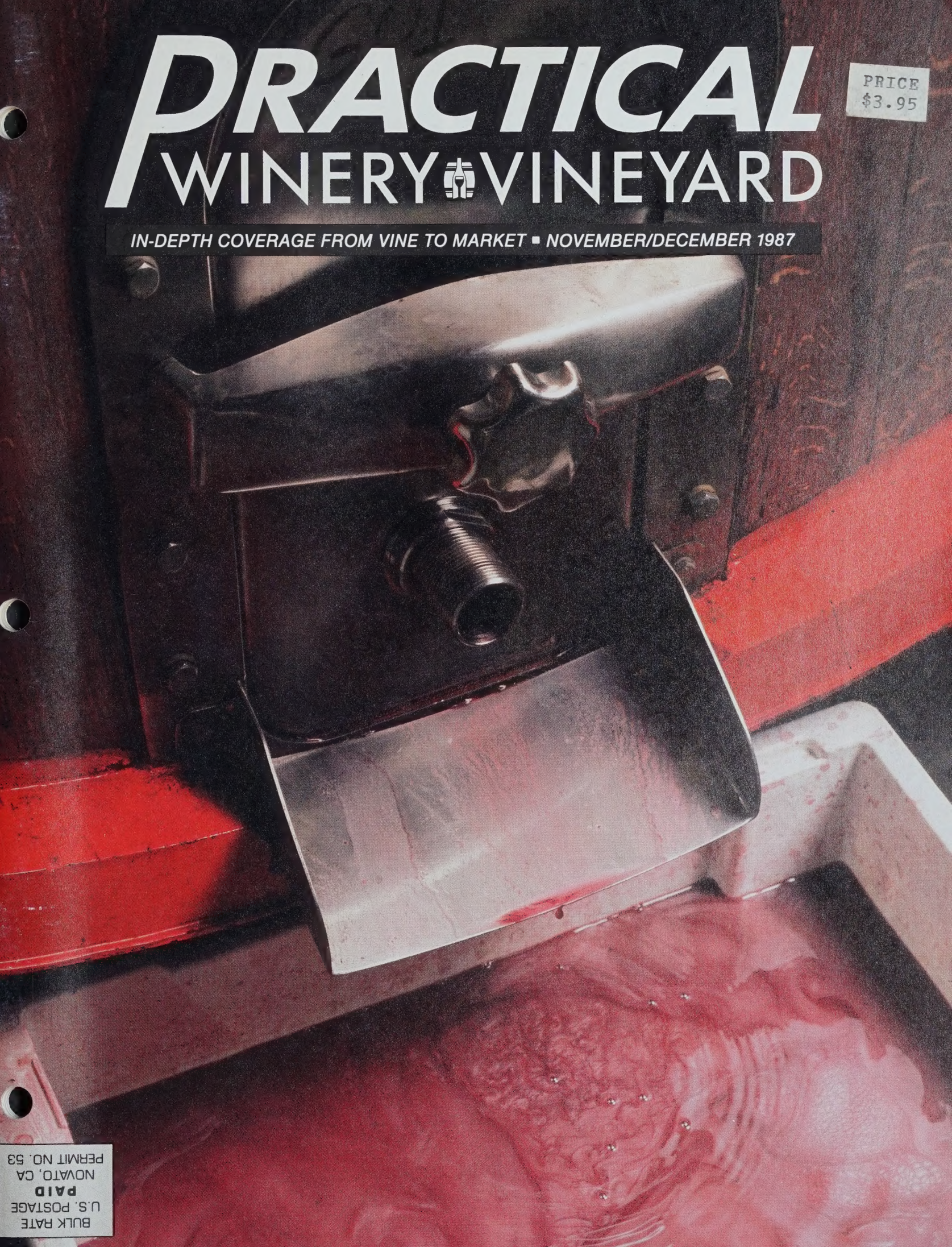

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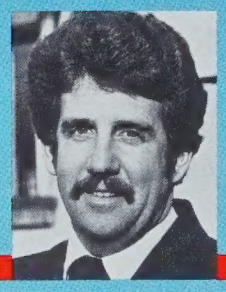

Tom Eddy
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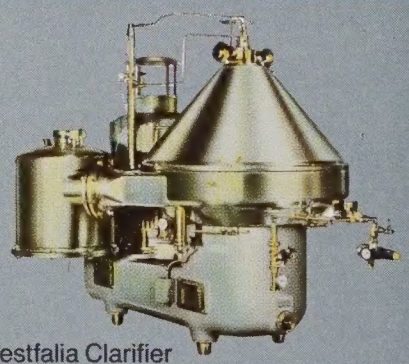

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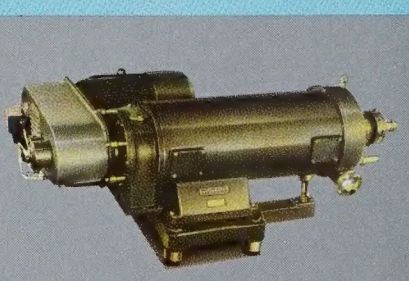

Westfalia Decanter

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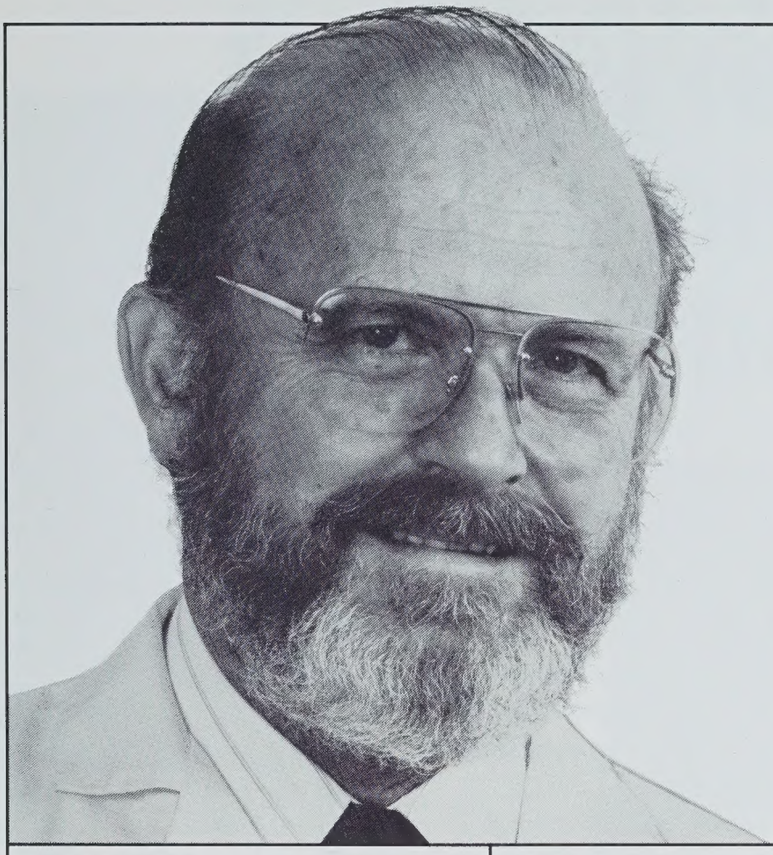

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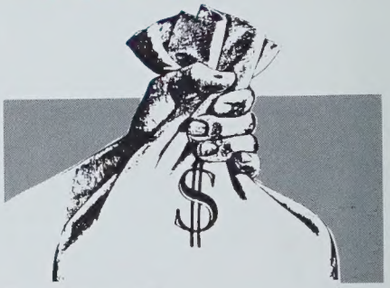

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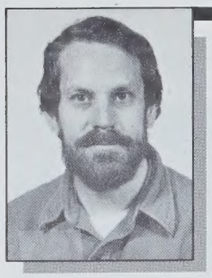

The Wine Retailer

Stan Hock

Little Wine Lies

November and December are the wine retailer's promised land. After treading water the first ten months of the year, my brethren and I shoot the rapids of the holiday season, emerging into the new year solvent—although exhausted—once again.

Sales in November and December easily account for 25%—33% of the year's gross receipts. This is due not only to a surge in the volume of sales, but also to an expansion of profit margin. During the holidays, customers buy more *and* they spend more per item. For the retailer, it's the best of all possible worlds.

The Lure of Quality

At this time of year, wine consumers are predisposed to buy higher-quality, higher-cost wines, both for themselves and to give as gifts. Since most consumers are not confident enough about their wine knowledge to make these selections themselves, they depend upon the advice of retailers, wine writers and friends. They also look for guidance to information provided by producers.

A wine's price provides the consumer with a rough indication of its quality, but there are hundreds of selections in every price category. Brand reputation is another guidepost, particularly for more knowledgeable buyers, but, here again, there are an imposing number of highly-reputed brands on the market. Medal stickers that festoon many premium wines these days also bespeak quality, but, given the sheer number of wines that now sport them, they have been devalued as quality indicators.

Finally, the wine label conveys an assortment of messages—some overt, some subliminal—directly to the consumer. Attractive graphics—particularly in conjunction with a super-premium price tag—may seduce the most knowledgeable of buyers. A label's printed information, cleverly formulated, may accomplish this too.

For the producer, obviously, it is more advantageous to possess a Napa Valley appellation than a Central Coast appellation, better to bear a vintage than nonvintage designation and more prestigious to be selling Chardonnay or Cabernet Sauvignon than Chenin Blanc or Petite Sirah.

Beyond these basic, BATF-regulated items of information, wineries increasingly employ other, discretionary words or phrases that are not regulated by the government. The purpose of these is to persuade the consumer that the wine in the bottle they're examining is superior and distinctive. What's interesting is that these claims need not be true.

The New Jargon of Wine Labels

Combine words like 'vintage', 'barrel', 'special','classic', 'private', 'proprietor's', 'owner's', 'collector's', 'vintner's', 'winemaker's', 'gold' and 'artist's' with words like 'select', 'selection', 'reserve', 'choice', 'label' and 'series'. What do you get? Catchy little phrases that help to sell both inexpensive and top-of-the-line wines.

Although these indeed may be accurate descriptors explaining how a wine was produced and/or set aside for special bottling, they often are meaningless phrases that have everything to do with marketing strategy and nothing to do with wine quality.

No government regulation requires a wine bearing a 'Special Selection' designation to be any different, or better, than other wines of the same type whose labels are bereft of such lofty declarations.

Certainly, there are numerous wines that merit the marks of distinction accorded them. Even occasional wine drinkers know that Beauleiu's George de la Tour Private Reserve Cabernet Sauvignon is a special wine far different from, and superior to, the winery's other bottlings of Cabernet Sauvignon. Similarly, retailers can explain to their customers that Sterling's Reserve red wine is an annual blend incorporating the winery's best lots of Cabernet Sauvignon, Merlot, Cabernet Franc and Petit Verdot.

But how do we explain to retail customers the distinguished monikers of mass-produced $5 wines like Glen Ellen Winery's Proprietor's Reserve Cabernet Sauvignon and Chardonnay? What sterling qualities might the unassuming wine drinker find in Gallo's Reserve Dry Chablis that he or she would not encounter in Gallo's regular Chablis?

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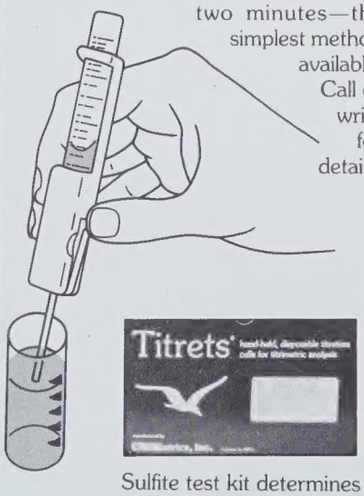

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doah Winery its only red Zinfandel 'Special Reserve'? DeMoor Winery tells us that one of its Cabernet Sauvignons is an 'Owner's Selection'. Why did the owner select it? Is it significantly superior to De Moor's regular Cabernet Sauvignon, or did the owner just take a liking to the group of pallets it was stacked on?

Since BATF does not regulate the use of value-laden descriptive phrases like the above, the consumer does not know whether they denote wines of unusual quality, or simply are sales gimmicks. Given that most people believe what they read, the potential for abuse in this area is great.

Glen Ellen may be doing consumers a good turn by marketing high-quality/low-cost Cabernet Sauvignon and Chardonnay, but their use of the word 'reserve' is confusing and misleading.

Producers will respond that the use of such phrases is simply a matter of creative marketing and that, in today's extremely competitive wine market, any technique that boosts sales should be exploited.

Yet, ethics aside, we have witnessed, in recent years, the devaluation (perhaps vulgarization is a better word) of the awards won at wine competitions. Virtually every wine on the market has won a medal somewhere. It no longer means very much, and consumers are wising up to this.

Might not the same thing happen to wine label buzz-phrases? When a $3 bottle of chablis and a $30 bottle of Cabernet Sauvignon both bear the designation 'Reserve', does the word reserve have any meaning?

An Informal Survey

Recently, I visited a Liquor Barn to survey the premium wine field for its incidence of value-laden descriptive phrases (my own shop, which has a much smaller selection of primarily super-premium wines, was not suitable for this survey). I looked at Chardonnays and Cabernet Sauvignons and at generic red and white wines.

In this survey, I narrowed the field by excluding vineyard-designated wines (Heitz Martha's Vineyard Cabernet Sauvignon, etc.), those with proprietary names associated with high quality (Opus 1, Joseph Phelps Insignia) and designations devoid of value associations (vintage red, etc.). I also ignored phrases associated by many with quality, such as 'estate-bottled', which is regulated, or 'barrel-fermented', which is not. Here's what I found:

Of approximately 210 Chardonnays, more than 20 bore descriptive phrases suggesting they were somehow different from, and superior to, other wines produced by the same winery. Of these, 10 cost less than $10/bottle, a price range not usually associated with the very finest wines. Of 240 Cabernet Sauvignons, 27 had special designations and 7 of these cost less than $10.

In the generic field, I counted 52 white wines, 7 of which bore qualifying words or phrases. Four out of 33 generic reds were similarly described. Of 50 premium generics in magnums, ten had special designations.

My calculations indicate that, of the approximately 585 wines I counted, over 12% (more than 70) bore special designations.

Do you think there actually are that many wines deserving of the mark of distinction conferred by phrases like 'special select', 'reserve' and the like? I don't.

C'mon, producers. I know it's a jungle out there, and you need all the breaks you can get, but it's best not to squander your credibilty.

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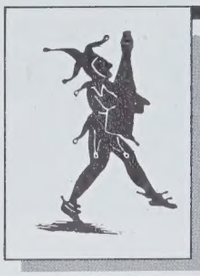

In the Cellar

Jake Lorenzo

The Sonoma fog rises eerily. My jet black steed glistens, eyes blazing as he charges ahead. Up in the saddle, straining forward, I reach out.

All of us try for the brass ring when it is offered. Private eyes are no different.

It began this way:

Chuy's Burrito Palace sizzles with the pungent aroma of chorizo and eggs. Chuy slams the plate down on top of the airplane ticket. He pours a dollop of Hornitos into my coffee and takes a slug from the bottle for himself.

"What's the big deal, carnal? So I buy my amigo a plane ticket. You got to get going. Four months, you ain't done nothing. Even when I get you an easy money trabajo you drop out on me."

He's right. I mean, I'm a private eye. It's what I do for a living. Chuy had me lined up for two weeks' security work for a local rock star. Easy money for sure, but I just couldn't face another group of 35-year-old heavy metal rock stars with their adolescent 'party till you drop' machismo.

"You got people all over asking for you, but you don't do nothing."

Chuy's right again. Even now, letters from the Epicurean, Wine and Spirits and Montelle Notes sit unanswered. To hell with Crocodile Dundee, they say. Australia wants Jake Lorenzo. Offers of fantastic debauchery Down Under. Promises of readers eager for my insights, charmed by my wit. Even apologies for their weakened dollar as they promise exorbitant payment for my columns. But I haven't even done my columns for PWV, let alone all these.

"Hey amigo, look at it as a loan. I know you're good for it. Besides, it's worth it so I have don't have to look at your ugly face cada dia."

I take the ticket and head out. Chuy's grinning. "Homes, don't let them push you around. Recuerdo, this dude's on his home turf. Scope it out, watch your back, then blow him away."

The plane ride to D.C. is uneventful except for two desperate dives to avoid other aircraft somewhere over Utah. I look up from Elmore Leonard in time to catch the end of the movie. A bunch of chimpanzees stole a government airplane and took off for monkey paradise.

I get my bag out of Dulles Airport in a speedy 84 minutes, jump into a cab driven by a gentleman who says he used to be a colonel in the Iranian Air Force and get into Georgetown in record time. I walk into Chadwicks, order a Sam Adams and haven't finished half of it when Dr. Iggy Calamari slaps me on the back.

Iggy is doing splendidly working as a lobbyist for the Wine Institute. His wine-powered pacemaker is almost ready; in the meantime, he spends his time drinking fine California wines with influential politicians, all the while extolling wine's medical, life-sustaining virtues. We cab it over to the Willard to sip wine with the ghosts of Grant, then hoof it over to the Occidental for port amongst the 8x10's. We finish with our own bottle of Hornitos on the steps of Congress.

I love Washington D.C.

The next morning I sit sweating under the hot t.v. lights. Slightly hazy from my evening with the good Dr. Calamari, I am reminded that D.C. is a city of addicts, and that the drug of choice is power. In D.C., it's not just whom you know, it's how closely you rub up against them.

In this town of players, Jake Lorenzo, private eye and sometime wine writer, sits in the blinding white light waiting for wine writing's supreme commander to take him on, one on one, mano a mano. Because of a sick brainstorm of Dr. Calamari's on behalf of the Wine Institute, we are about to film a test pilot for "At the Winery," a take-off on Siskel and Ebert. On this side, Jake Lorenzo. Across the bar, the boss, the ultimate player: Robert Parker.

Robert Parker is fun to read. He is opinionated, experienced and well-qualified to do what he does. To my way of thinking, he's the best at rating and describing wines, but you can't read him for too long without all those wines and descriptions running together. I recommend you do what I do. Keep your copy of *The Wine Advocate* in the bathroom and read him in short spurts.

Robert Parker tastes Bordeaux wines when they are 6, 9 and 18 months of age. He tastes them several weeks to a month after assemblage has been completed. He tastes vintage Bordeaux single-blind, using proper glasses, correct temperatures and colored backgrounds. He rates wines with his 100-point system.

Jake Lorenzo doesn't do any of that stuff. I don't taste a chef's raw eggs to determine the future of his souffle, nor would I try Chuy's raw chorizo while he's curing it in the refrigerator. I actually prefer Zinfandel from those jelly jar-like Italian wine glasses, and I will never understand America's need to assign numerical superiority and inferiority to everything. It all smacks of grammar school and gold stars or puffs or whatever.

Robert Parker seems dedicated to his work. He appears to be a thorough man of great integrity. But his very system forces us to focus on wine as a commodity. His writing encourages people to buy wines as investments. While Parker's great experience allows him to understand that, in the proper setting, "a simple wine can become sublime and memorable," too often his writings are used by wine buyers as the exclusive reason for refusing to put those simple wines on their shelves.

In short, it is great folly to try to quantify quality, especially in something as vibrant, magical and varied as wine. The attempt to do so not only denigrates the product itself, it also performs a disservice to those whose very lives are entwined in its production.

I realize Robert Parker is in business. I wish him success, but he shouldn't overlook David Shaw in the *Los Angeles Times*: "The United States is the only country in the world with an influential wine press.... On the European continent, most people grow up drinking wine. It is an integral part of their culture. They do not need a writer to tell them what to drink."

Surely, for all of us who love wine, Robert Parker included, making wine an integral part of our culture is an honorable and desired goal. This continual bowing and scraping at the altar of the mythical 'best' is self-defeating.

Needless to say, "At the Winery" didn't work out. I knew from the beginning it wouldn't, but there are times in a man's life when he must stand up and be counted. There are times when he must make the glorious, futile gesture. I'm Jake Lorenzo, private eye. Making the glorious, futile gesture is what I do. It's something I'm good at.

Someday, I'd like to spend an evening with Robert Parker. I'd like to take him on a pub crawl around the Sonoma Plaza, run into local growers, winemakers and cellar rats. Take him to the Burrito Palace for a late breakfast of chorizo and eggs. And, if the fog is just right, I'll treat him to a ride on the merry-go-round, and he can have a try at his own brass ring.

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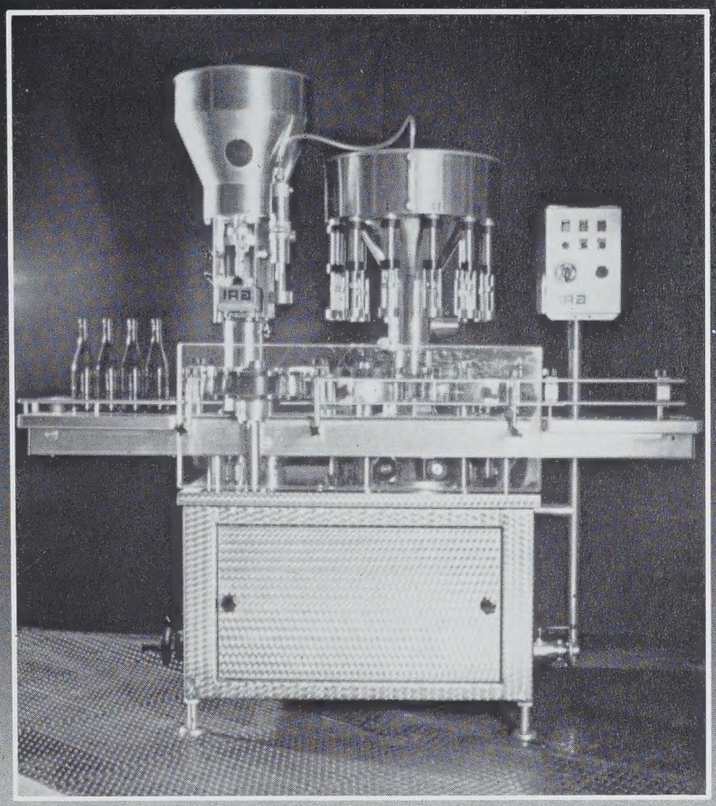

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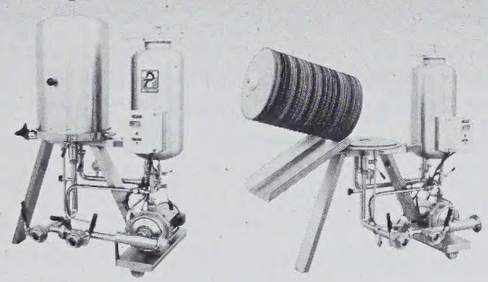

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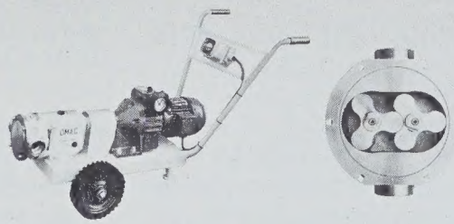

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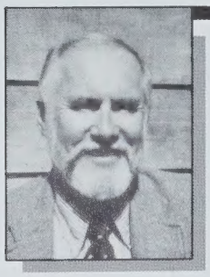

Winery Water & Waste

D.R. Storm, Ph.D, P.E.

Winery Wastewater Workers Arise!

Somewhere out there among the pumps, ponds, and manholes, those of you responsible for keeping water, wastewater and other utility systems in working order may occasionally have a chance to scan these columns.

I suspect there may be enough of you with common vocational interests to establish an informal group whose objectives would be information exchange, group problem-solving and, if it became desirable, socializing.

Certainly ASEV technical workshops have been a good forum for many wine industry technical issues, but it is not often that staff 'ground pounders' get a chance to go to annual conventions at San Diego, Anaheim or Reno. Winemakers and cellar masters certainly need to get together professionally and, in my opinion, so do many of the people who 'turn on the switch'.

If you feel strongly about establishing a technical group, send a postcard or note with suggested group names and organizational suggestions to:

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Land Confinement and Zero Discharge

In my opinion, the 'perfect' winery wastewater system would consist of a pond system with aerobic treatment for biodegradation of organic matter and sedimentation basins for accumulation of settled solids. This ideal system would be in such harmony with the local climate that the following equation could be satisfied: wastewater production + rainfall−solar evaporation−pond seepage = 0.

Unfortunately for most premium wine grape growing areas, rainfall in wet years exceeds the annual rate of solar evaporation, so that it is not feasible to achieving a true hydrologic balance for all weather cycles.

My only experience with this sanitary engineer's nirvana was in southern California near Temecula, where several wineries literally recycled their wastestreams directly back to the atmosphere, without the use of a vascular plant 'middleman' to effect evapotranspiration.

History of Farming with Wastewater

The use of land application systems for wineries is not a new concept and a previous *PWV* column (Jan/Feb 1985) cited the following study in California: as of 1975, 13 wineries and brandy distilleries were using reclaimed wastewater irrigation as the preferred method of effluent disposal. In the past 12 years, however, the number of wineries practicing wastewater reclamation has increased due to:

- Ready acceptance of wastewater reclamation and re-use by most local wastewater regulatory agencies, which are embracing a national philosophy of water conservation and enlightened water resource management.
- The cost-effectiveness of a land confinement system; and
- The relative ease of expanding systems to accommodate growth in a winery's production capacity.

One of the earliest uses of reclaimed winery wastewater in California was for frost protection purposes. In 1978, the Napa Sanitation District and American Canyon County Water District proposed an idea for regional vineyard frost protection and irrigation using reclaimed municipal wastewater.[1] (in all instances in this discussion, the use of reclaimed water refers *only* to winery process water, *not* sanitary waste).

In some regions of the US where wine grapes and wineries flourish, climatic constraints severely limit the practicality of process wastewater recycling. However, California's mediterranean climate of wet winters and dry summers requires that most crops receive supplemental irrigation. Thus, there is a built-in ingredient for success with winery wastewater recycling.

Soils

Soils with the proper texture and reasonably good infiltration capacity[a] make the scheduling of irrigations and control of return flows[b] much easier.

It is the job of an irrigation engineer or agronomist to determine the proper amount of acreage to irrigate, given a winery's current and anticipated flows. This person, by evaluating wastewater production, storage available to re-regulate flows, the crop's ability to transpire water and prudent safety margins, can accurately size the land system to produce a workable, rationally designed land/crop matrix.

Salt Balance

Achieving what agronomists call 'salt balance' is another water/soil factor that affects the long-term success of a reclaimed wastewater system. Soil texture characteristics may also indicate the likelihood of a salt build-up in the root zone, a condition which can inhibit vigorous growth or even kill some salt-sensitive crops.

Soil amendments, such as addition of gypsum, may enhance the downward movement of unwanted chemicals that inhibit plant growth. Over-irrigation and natural rainfall can work individually or together to flush or leach salts to deeper levels in the soil profile.

Your county farm advisor or agriculture commission staff person may have the best advice on local soil types, salt-resistant crops and methods of maintaining an optimum balance of chemical salts.

Delivery System

Designing the water delivery system to match the infiltrative capacity of the soil eliminates a lot of future headaches. A competent irrigation designer will try to match the sprinkler application rate in inches/hour to the infiltration rate of the soil.

This is a complex decision, however, because the infiltration capacity of a particular soil type is not a constant value. For example, crop cover, such as a permanent pasture, can improve the infiltration capacity of a soil. A soil with a high clay content may have a very high infiltration rate when it's dry, but when wet, the infiltration rate may be reduced to nearly zero as the clay swells.

Drip systems work well for vineyard irrigation and are the most efficient delivery system for selected crop covers. Sprinkler systems, on the other hand, maximize spray losses and surface evaporation from the crop canopy, thereby maximizing the use of water.

Crop Selection

The crop selected to receive the effluent should be carefully chosen to maximize consumption of reclaimed water. However, cautions should be observed.

Using reclaimed wastewater is a way to augment water supply. Blending it with the primary irrigation water can buffer adverse salinity effects on the vines. If a winery's raw water supply has a low salt content to begin with, the salt-accretion by winery process use probably will not be a problem.

(a) Infiltration Capacity – The surface characteristic of a soil which allows penetration of rain or surface irrigation to deeper levels in the soil profile (measured in inches/hour).

(b) Return flows or Tailwater – The excess irrigation water that does not infiltrate the soil which, in the case of most reclaimed water irrigation systems, must be controlled to achieve a truly 'zero discharge'.

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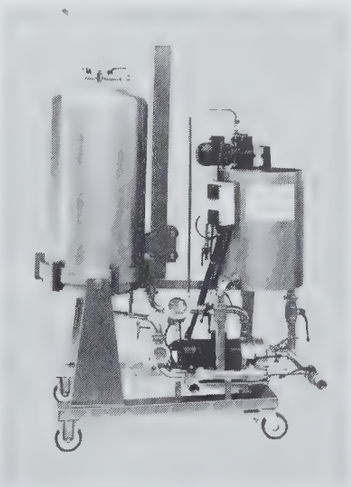

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However, if a winery's raw water supply has a total dissolved solids (TDS) concentration greater than 700 mg/L, or electrical conductivity greater than 1,000 micromhos/cm at 25°C, or chloride-ion concentration greater than 170 mg/L, dilution of the effluent should be undertaken before irrigation.

There are soil conditions that can either mitigate or exacerbate the potential harm to crops of high salinity water. Consult a competent agronomist familiar with local conditions and the local farm advisor before committing to crop selection or to vineyard irrigation with undiluted, reclaimed winery wastewater.

Effluent Disposal

Most wineries aren't blessed with a land surplus. If soils are good (or really deficient, as many great California hillside vineyards literally are in fractured rock) and there are no high groundwater problems or solar orientation constraints, vines can grow on those acres.

Plant materials in gardens and surrounding landscapes often are an overlooked 'sink' for reclaimed winery wastewater. But the trend in the arid, water-scarce western US is to landscape with 'drought resistant' species which can thrive on a thimble-full of water annually.

It follows that if your winery landscape consists of oleander, tamarix and castor bean, your chances are nil of teaching these species to consume vast quantities of water.

A final observation: it is probable that the piece of winery land (outside of vineyards) committed to effluent disposal may already be abundantly covered with native species of grass, shrubs and trees.

Do not assume that this native vegetative complex will respond positively to irrigation. It is quite possible to kill an oak tree with love and too much water.

In my experience, the native species that usually thrive with watershed irrigation and reclaimed wastewater are noxious weed-types like thistles, which adapt to a wetter environment and outcompete less vigorous species for the new supply of plant nutrients contained in the wastestream.

Existing Systems

If you are not satisfied with the performance of your existing land application system, analyze the operation in light of some of the factors highlighted in this column.

Soil amendments, over-irrigation to leech salts, improvement in infiltration rates by 'soil spiking' and other techniques can prolong the life of the crop cover, and postpone for an indefinite period the need for expensive replanting and re-establishment of the plant system.

David Storm is a consulting civil and sanitary engineer and owner/winemaster of Winters Winery.

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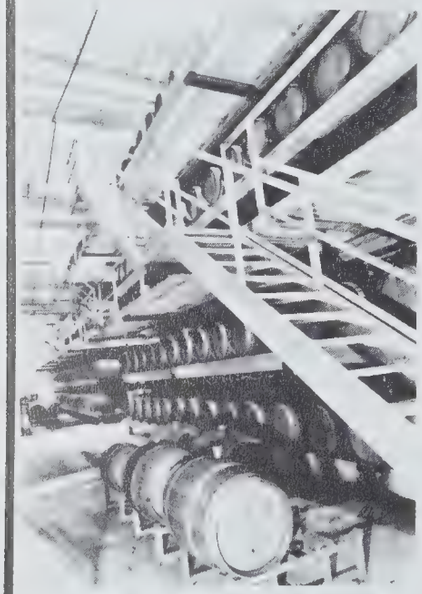

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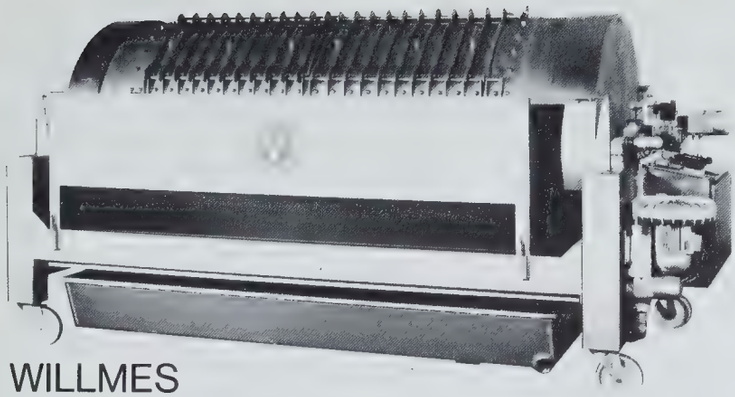

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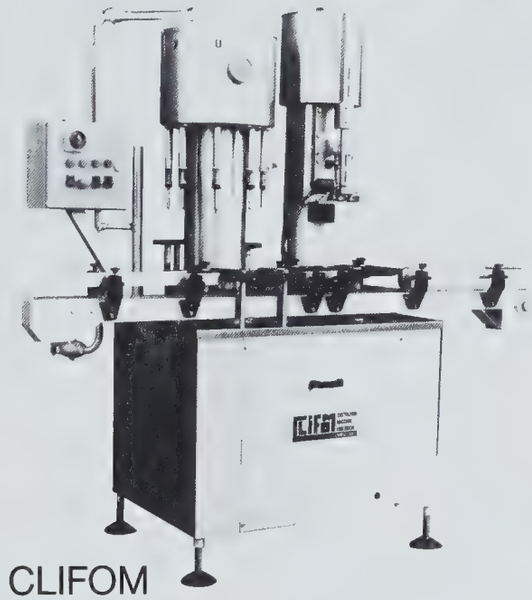

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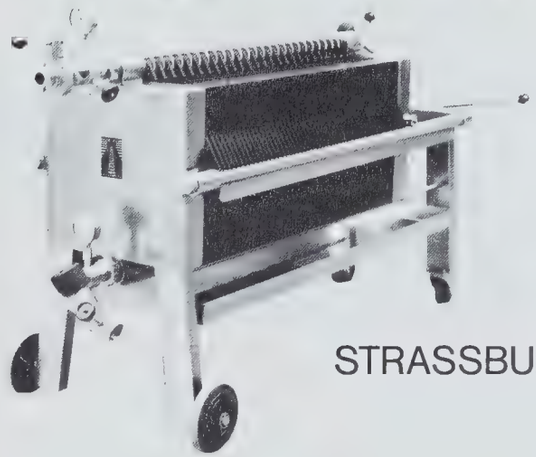

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Tim Murphy points out Sauvignon Blanc grapes on vine waiting for harvest with leaves pulled in the fruit zone.

Dennis Murphy reviews charts with spraying history of a growing season.

NO SUBSTITUTE FOR EXPERIENCE —IN— GRAPEGROWING

Eleanor & Ray Heald

Many grapegrowing experiments in close spacing, canopy management, irrigation, and diamond planting, to name a few, have been reported by *PRACTICAL WINERY/VINEYARD*. Tim Murphy, owner of Murphy Ranch, Geyserville, CA has done his experiments and developed a successful equation that works for his vineyard.

Evaluating the Numbers

Murphy, an animal science major and 1952 graduate of UC Davis, began his farming association working for a large cattle/sheep operation in northern California. After a stint in the military, he returned to the San Francisco Bay area where he worked 15 years in the meat business with his father, across the street from the current location of Chez Panisse Restaurant in Berkeley, CA.

In 1966, Murphy purchased a family summer home in Sonoma County. In the next several years, he bought adjoining parcels of land, principally prune and pear orchards plus some old vineyards, totaling 165 acres. "The big decision," says Murphy, "was deciding what to do with the land." Today, that property is Murphy Ranch in Geyserville, in the heart of Alexander Valley.

Upon the advice of Simi Winery, and the Sonoma County Agricultural Extension Service, plantings of hillside parcels (field buddings on St. George rootstock) with Cabernet Sauvignon were made in 1970; followed in 1971 by Pinot Noir, Merlot, and Zinfandel. This decision was made principally because the hillside soil composition is heavy loam-clay with some gravel.

At this time, Murphy was still in the family's meat business, with grapegrowing as a weekend hobby. By 1974, demand for prunes declined while grape prices rose; therefore, the decision was made to clear prune orchards and plant more grapes. With advice from hired consultants, Murphy planted white grapes, principally Sauvignon Blanc (Wente clone, Christian Brothers scion wood) and Chardonnay (scion wood from Robert Young Vineyards) on the flat river bed parcels of sandy loam with much gravel.

Managing the Variables

Gravel deposits from the meandering Russian River are most irregular. To avoid patches of severely-stressed vines, Murphy installed an underground drip irrigation system with ½ gal/hr emitters spaced 24–48 inches apart based on soil porosities in 1982.

Hillside plantings are irrigated by above-ground drip irrigation. A neutron probe service is contracted to determine soil-moisture content weekly, at several permanent sites. Murphy cautions against full reliance on a neutron probe, however.

"The first year, we followed advice to the letter, but now that we're smarter, we dig holes with a shovel, a couple of feet deep in a few spots to examine the soil before we apply more water," states Murphy.

Canopy management is very important to Murphy, "For the white varieties, we do a lot of leaf-pulling to open up the center of the vine for better air flow and to get more light on the fruit. We delay cane-cutting until veraison because if you do it too soon, the canopy just closes up again.

"We've tried training/trellising experiments with our whites–bilateral, quadrilateral cordons, and double cross-arm systems. We get our best results with both Sauvignon Blanc and Chardonnay by cane-pruning to 4–5 canes, 12–14 buds/cane, which yield 5–6 tons/acre.

"If we keep less wood on, the growth is so rapid that we find shatter, shot berries, and very low crop load because the fruit won't set. Single cross-arm is successful for Sauvignon Blanc. For Chardonnay we use a 3-wire vertical trellis. It's inexpensive and it leaves the vine more open than cross-arm.

"We try to maintain a balance so that bunch thinning is kept to a minimum. When we have to thin, we try not to do it until veraison. We've found that if you thin too soon, the berries on the remaining bunches just get larger, and you've done nothing for the crop load.

"The hillside (red grape) plantings need little canopy management due to low vine vigor. We train to bilateral-cordon and use a simple two- or three-wire trellis. If the vines weren't

trained that way originally, we are going that way now because it cuts the cost of pruning in half. It is easy to teach a person to cordon-prune to eight 2-bud spurs and it can be done twice as fast as any other system.

Developing an Equation

"Weighing brush and all these experiments are fine, but what you need is experience in your vineyard. You have to know from past experience what the vine will or won't do in a particular location. Each vineyard is different. I don't think that anyone can come into a vineyard and tell you much about it until he has gone through at least one growing season in it."

For pest control advice, Crop Care Consultants are contracted on a cost/acre/year basis. Crop Care monitors the vineyards by walking them 1–2 times/week. In addition, Murphy walks the vineyard daily, making personal observations about the spray program.

Essentially, Crop Care advises, but a wall chart of spray monitoring indicates that vineyard blocks have been deliberately skipped during certain applications. Murphy explains that visual observations dictated it or that individual wineries prefer particular chemical applications. As an example of the latter, some wineries only want Bayleton used to control mildew because they are uncertain about the amount of sulfur residue remaining on the fruit at picking.

The spray program varies year-to-year, but Murphy indicates that fungicides, herbicides, and preventive sprays are fixed applications. The following schedule at Murphy Ranch is fairly typical:

1) 6-inch shoot growth: mildew, bunch rot, early botrytis controlled by sulfur spray and Dithane.

2) 10–15 days prebloom: Bayleton, Dithane at approximately 12-inch growth in problem blocks.

3) Postbloom (14 days): repeat of prebloom sprays.

4) First cover: sulfur, Bayleton for mildew; Dimethoate for leafhoppers (if colony develops).

5) Second cover: red spider (mites), mildew.

"Annual laboratory soil and petiole analyses determine plant needs with respect to fertilizing," states Murphy. "We get fertilizing recommendations from Crop Care, but I don't always

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follow them. If a petiole analysis comes back stating nitrogen needed, we take a look at the vines, and if they are vigorous, we ignore the analysis. We'd only be compounding the situation by adding nitrogen. I'm not selling grape leaves, I'm selling fruit. This is where you need experience with the vineyard.

"We deal with a consulting firm for analyses—they have nothing to sell. When you have a chemical company advise you, they have to sell you something to stay in business. On the other hand, the consultants better be correct most of the time, or they won't be back the following year.

"Unequivocally, our success has been due principally to the consulting firm monitoring the spray, fertilizing, and irrigation programs, but we always blend these analyses with our experience—you just have to. I don't discourage the chemical companies from coming to take a look, because then we receive another point of view, but it all comes down to decisions we make with our own experienced people."

Murphy farms together with his three sons, Dennis, Jim, and TJ, who do all the field work, spraying, tractor work, machine maintenance, trellis repairs, and crew management for pruning and picking. There are eight additional full-time workers.

In 1987, there are a total of 165 acres under vines at Murphy Ranch: 30 acres Cabernet Sauvignon, 15 Pinot Noir, 5 Merlot, 45 Sauvignon Blanc, 22 Chardonnay, 25 Gewurztraminer, 20 Chenin Blanc, and 3 Muscat Canelli.

Communication—Formula for Success

Murphy Ranch maintains year-long communication with the winemakers they supply. Winemakers are invited to visit at pruning to examine the work done on their designated block. "Most winemakers don't come by anymore because I deliver consistent quality year after year" Murphy admits. "If you are forced to change some viticultural practices, you have to contact the winery well in advance. Chances are they will say, 'Fine, you know the vineyard,' but you've established an essential rapport.

"When a winery buys our grapes for the first time, the scenario is somewhat different. The winemaker needs to come to the vineyard to taste the grapes at various stages of development. If the winemaker likes one particular block better than another, and it's not reserved for a winery, it's committed to that winery.

"A long-term commitment is never made right off the bat. If I were a winery owner, I wouldn't do it. It takes two years or more to get to know the fruit, and if, in that period, there's an unusual growing season, it should take longer for a long-term agreement between the grower and the winery.

"Contracts are written today with harvest windows: as an example, 21.5 - 24° Brix for Chardonnay. The grower picks within this range for an agreed-upon dollars/ton. There's no bonus or penalty within the parameters. If you can't deliver within the range, you never have to worry about a long-term contract! In addition, more winemakers are judging by the taste of the fruit. When they like the flavor, we get it picked. From a consistent taste, a winery's individual 'window' develops.

"At harvest, we test sugars and someone comes from the winery to take grape samples. The winery calls in the evening with Brix, TA, and pH values; we compare numbers and try to set the picking date, barring unforeseen weather changes."

Annually, about 300 tons, (15% of the total harvest), is sold to sparkling wine producers—all the Pinot Noir and Chenin Blanc from Murphy Ranch as well as the Pinot Blanc from Murphy-Goode Vineyards.

"When things really get rolling around here during harvest, we can pick 150 tons/day and total 2,000 tons annually," claims Murphy. "We use picking crews, daughters-in-law, other family members of full-time workers, and neighbors. We own trucks for delivering grapes. The rate at which we pick depends solely on how fast the winery can process juice.

Keeping It Simple

"To simplify grapegrowing, you must surround yourself with good, self-directed help. I, personally, like to give a man a job and leave him alone. You also have to compensate workers for what they are capable of doing. Having sons in the business does simplify things for me, but I never encouraged them to pursue agriculture.

"In fact, I didn't let Dennis, who attended Cal Poly in Agricultural Engineering, come back to work on the ranch until he worked for another company for two years. The ranch would always be here if they wanted to work on it; if they didn't, that was OK too."

Keeping up with American wine consumption trends is not

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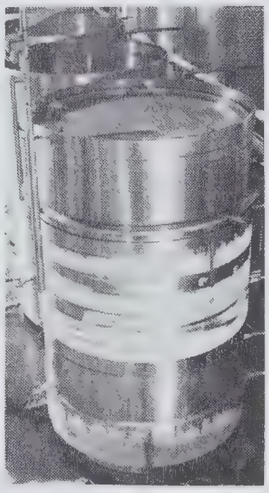
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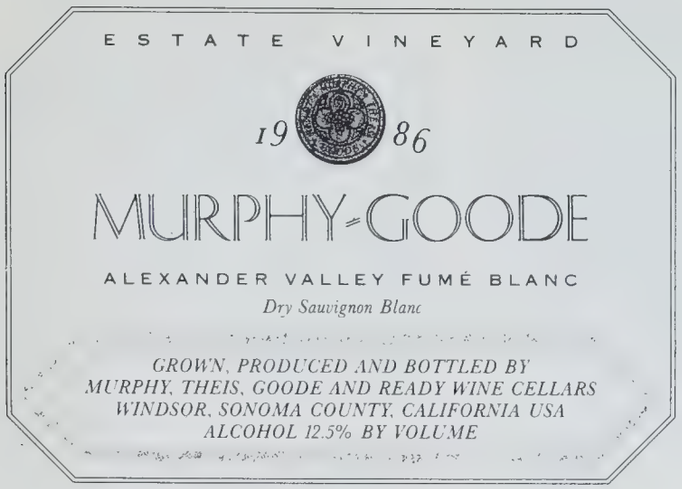

easy. "In 1984, we were all set to bud over some Gewurztraminer because the market was soft," Murphy comments. "At the last minute, I decided to wait one more year. Now, the variety is hot and we sell it all.

"Five years ago, you couldn't give Merlot away. We almost budded it over, but decided to wait—now it's the hottest red wine on the market. These experiences make me hesitant to bud over anything that's growing well unless there is a firm contract (dollar amounts and years) so that you knew you had a committed market for the variety. If it's a weak vineyard to begin with, budding over isn't going to change a thing—a bad Alicante vineyard just becomes a bad Cabernet Franc vineyard."

Murphy sums up his grapegrowing philosophy this way: "I don't know a single grower who isn't trying to produce the best fruit he can. Of course, each one does it a different way and some have better viticultural practices than others. Most importantly, the grower must be in a partner-relationship with the winery because the bottom line for both of us is sale of the wine produced."

Vertical Growth

Murphy-Goode Vineyard, begun in 1980, is a joint venture of the Murphy family and Dale Goode, a former Bakersfield, CA grower who moved to Alexander Valley in 1965 to plant grapes. Murphy-Goode has developed 150 acres, under a long-term lease, of well-drained, gravelly soil, on the Russian River in Alexander Valley near the Murphy Ranch property.

Chardonnay was planted on 28 acres and Sauvignon Blanc on 17 acres in 1981. In 1982, Piper-Sonoma gave Murphy-Goode a long-term commitment to plant 28 acres of Pinot Blanc. They also planted 25 acres of Chardonnay and 45 acres of Sauvignon Blanc, some of which was commited to Rodney Strong Vineyards. In the spring of 1982, five acres were lost to flooding by the Russian River. Planting of Murphy-Goode Vineyard was completed in 1983. All vines are planted on AXR-1 rootstock spaced 8x12 feet and the first grapes were sold in 1984.

In 1985, leaf removal was done on all Murphy-Goode plantings for the first time. In 1986, they removed leaves earlier, in June, right after berry set. In July and just before harvest, they skirt the canopy at 24 inches above ground. Some cane positioning is done at the time of leaf removal.

In November, 1985, Murphy-Goode-Theis-Ready (MGTR) was established to produce and market wine. Rick Theis and Dave Ready provide the marketing expertise. The first wines released were a 1985 Sauvignon Blanc and 1985 Chardonnay. In 1986, MGTR harvested 40 acres of Sauvignon Blanc and 30 acres of Chardonnay. MGTR purchased 15 tons of Cabernet Sauvignon and 15 tons of Merlot to produce approximately 1,800 cases from Murphy Ranch vines planted 1969-70.

Total 1986 MGTR production was almost 22,000 cases. In 1987, MGTR plan an 8% increase in production with the purchase of 30 tons of Cabernet Sauvignon and 15 tons of Merlot. MGTR are constructing a 10,000 sq. ft. winery to produce 25,000 cases annually complete with a public tasting room on a two-acre parcel of the Murphy Ranch property.

Wine-style Goal

MGTR do not want a big, herbaceous style Sauvignon Blanc. They want to produce a fruity wine with a long finish to accompany seafood. For Chardonnay, they want to showcase fruit not overwhelmed by oak. Red wine styles are not yet defined. The 1986 vintage will be bottled as a varietal Cabernet Sauvignon and a varietal Merlot with some possible cross-blending.

Murphy concludes, "MGTR was a natural vertical expansion, but I only know how to market grapes and that's not the same as marketing 25,000 cases of wine."

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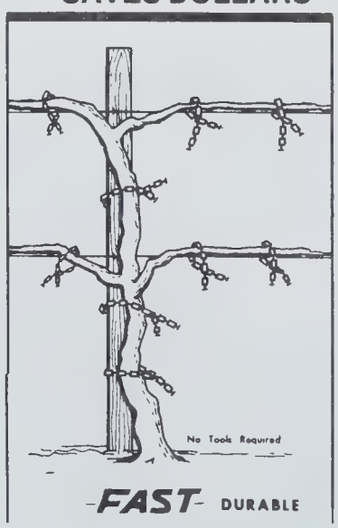

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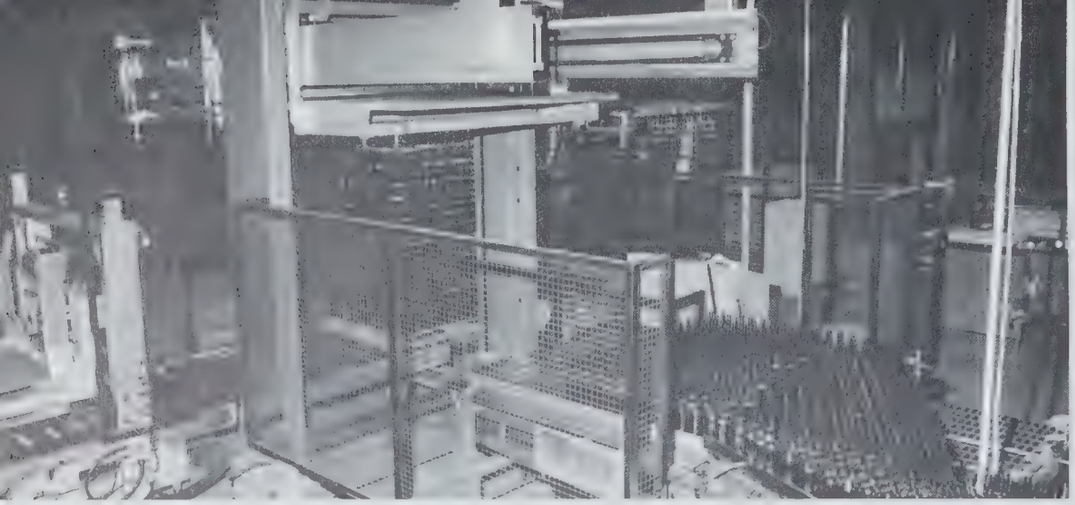
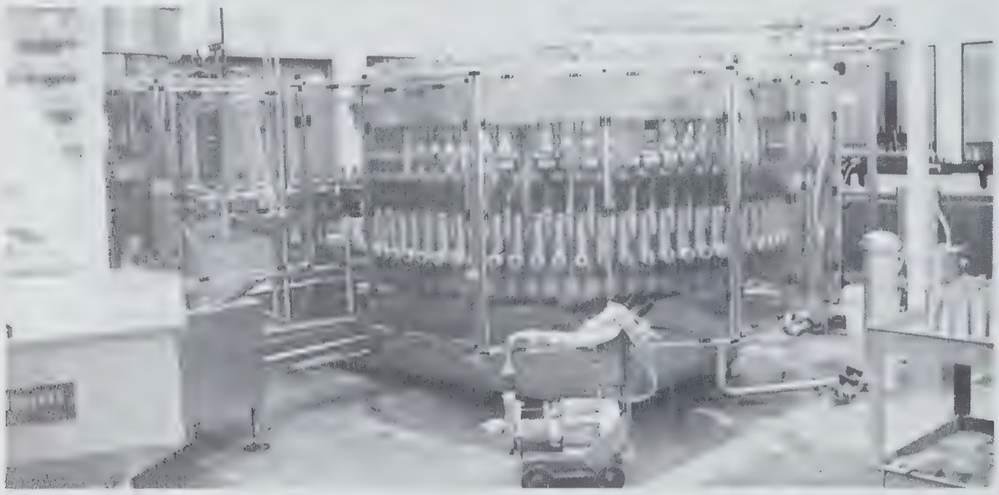
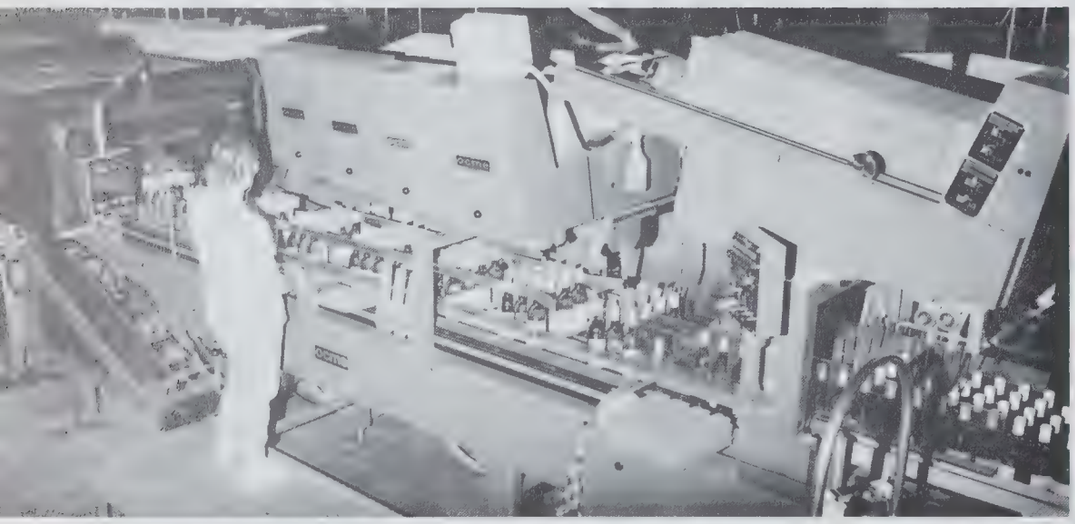
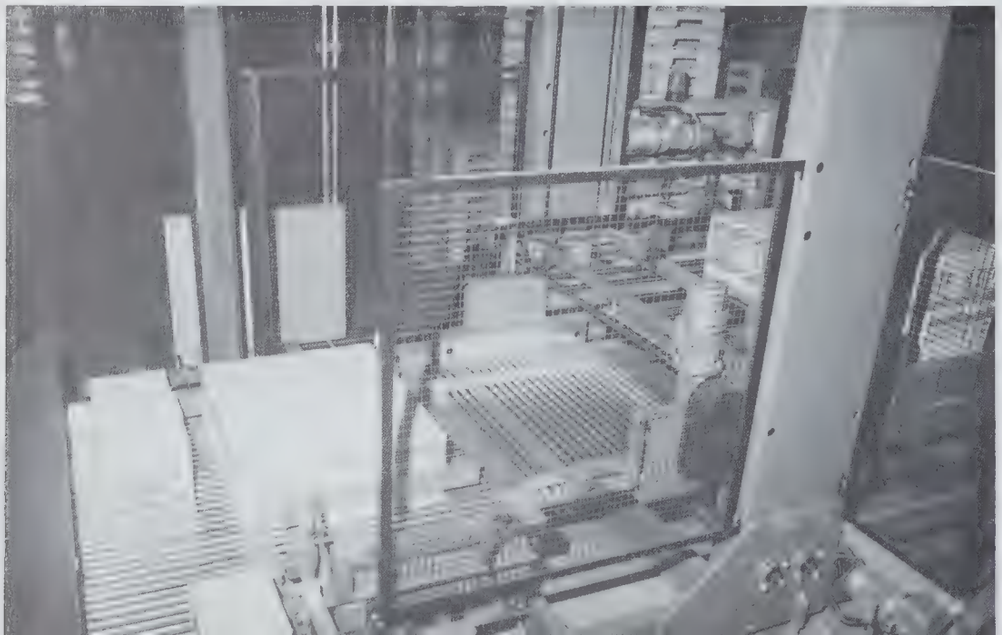








New Sutter Home Bottling Line Fills 350 bpm

The St. Helena, CA winery has installed new equipment which can fill over 14,000 cases of White Zinfandel in a 10-hour day. The equipment requires just seven operators and one forklift driver.

A key feature of the line is efficient bulk handling. A Model Dinamic DS by Berchi quickly, but gently, depalletizes a six-tiered pallet of 1,700 bottles. The Berchi unit removes the tier sheets and transfers the bottles to a conveyor system supplied by Bertolaso.

With bottles moving at high speeds, the stainless-steel conveyor chain is sprayed with a lubricant (a specially formulated soap) at critical points to minimize friction. S.J. Industries supplied a twist rinser bottle washer, the first stop

(continued on p. 20)

SPOTLIGHT ON NEW INSTALLATIONS

Battery-Powered Irrigation Filter Installed

In photo (right), David Henry (l) of Harmony Farm Supply discusses operation of the Sneezer Filter with Jack Weiller (r), owner-grower of Weiller Twins Vineyard.

When Phillip Cotturi of Enterprise Vineyard Management, designed an irrigation system for the new Weiller Twins Vineyard, Sonoma, CA, he had one problem: a remote location with no electric power. His solution was a Sneezer Filter, supplied by Parker Engineering, which runs all season on two six-volt lantern batteries.

The filter handles 100 gpm and can irrigate 20 acres one day a week to establish new vines. As additional 20-acre blocks are added, the filter will handle

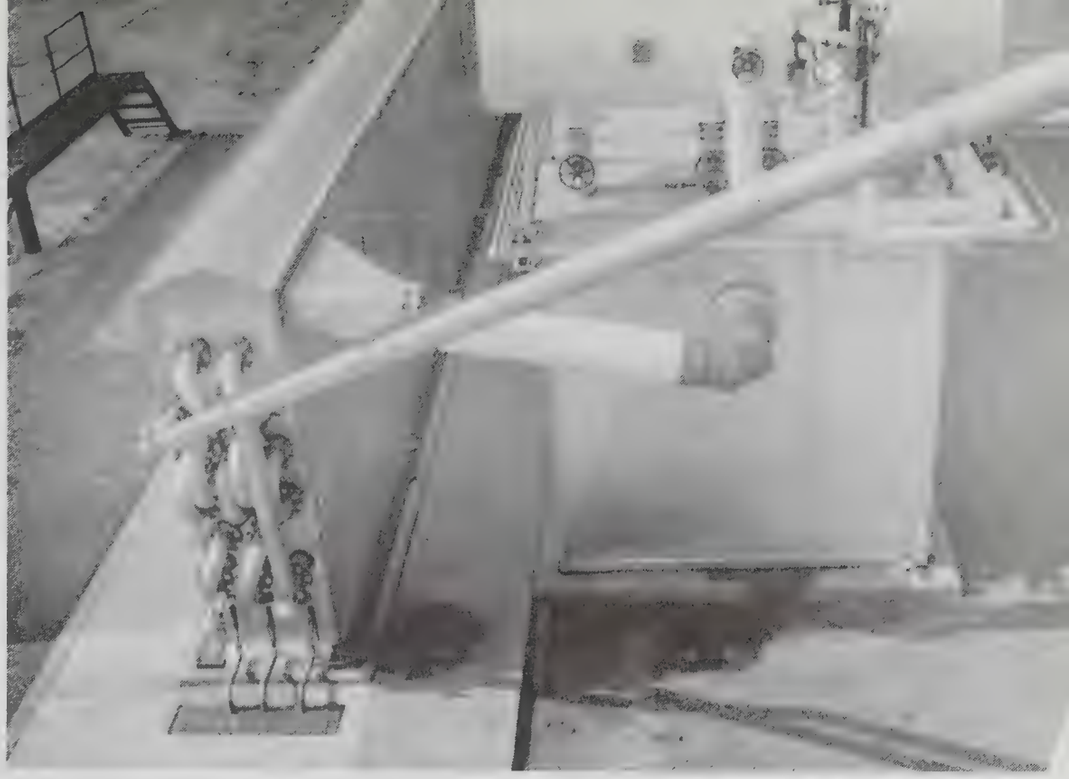
Christian Brothers Installs New Must Chiller

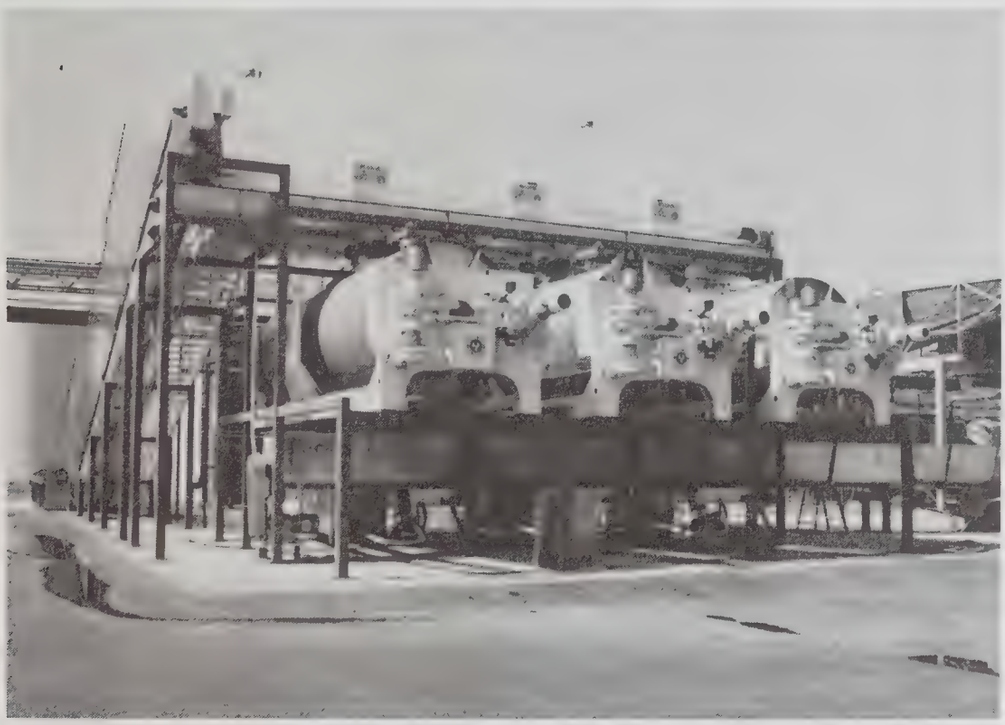
A single-tube must chiller in a cold-water enclosure was installed at the St. Helena, CA winery in time for the 1987 harvest. The new must chiller has helped winemaker Tom Eddy achieve his goal of improved juice handling for white and blush wines by cooling must to 55°F or lower immediately after crushing of the grapes.

The must chiller, designed by Jim Fehlhaber and built by Industrial Refrigeration and Process Piping, Inc. has an ice-making unit capable of producing 80,000 lbs of ice in 12 hours. This unit chills the water flowing through the must chiller.

The total system holds approximately 17,000 gallons of recirculating water. Almost 800 feet of 5-inch must line winds

(continued on p. 20)





Three Tank Presses Installed at Robert Mondavi Winery, Woodbridge, CA

Three Willmes TP25 tank presses (25,000hl) were installed at the Robert Mondavi Winery at Woodbridge, CA for the 1987 harvest. These are the first batch presses to be installed at the winery to supplement the winery's two continuous screw presses.

Each press can process a complete truck load (20+ tons) of Sauvignon blanc or Semillon grapes for the Robert Mondavi White program, or Zinfandel for the White Zinfandel or Robert Mondavi Rose program. Approximately ⅔ of grapes received are machine-picked and ⅓ are hand-picked.

Grapes are fed directly to the presses from the receiving hopper by two augers. One auger is positioned to remove skins from all three presses. Winemaker Brad Alderson attributes improved juice

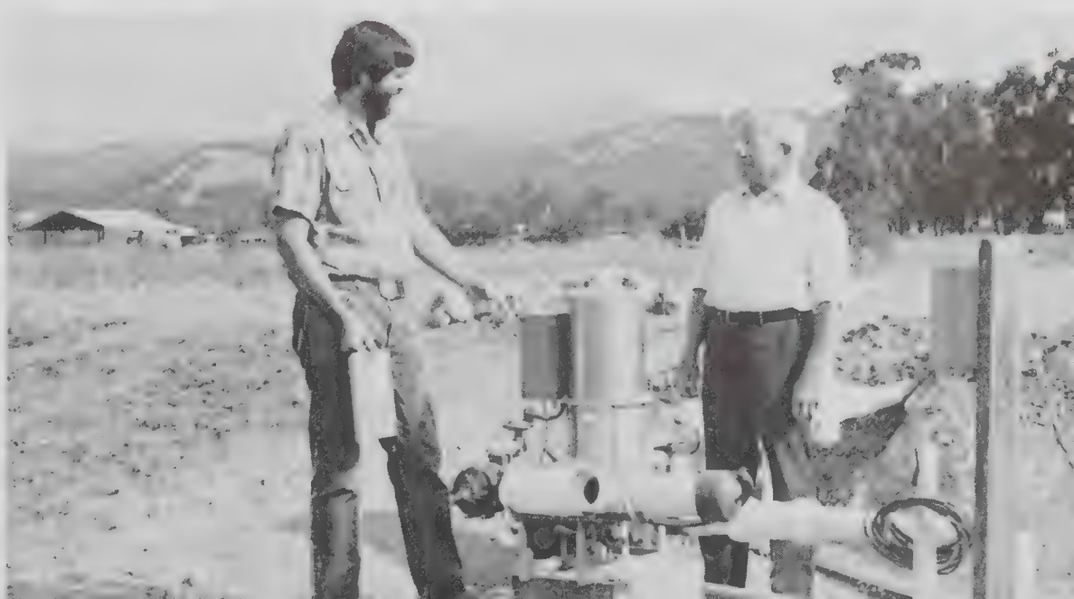
(continued on p. 20)

the same volume on alternate days.

The water supply is typical pond water. It's thick with algae which becomes thicker as the summer progresses. The filter's porous ceramic media filters and backwashes organic material, stringy algae and fish scales.

Cotturi comments, "I love the way it works. As the pond lowered during the season, not one emitter plugged up. Very little maintenance is required. The totally automatic, self-cleaning, battery-operated unit has solved the problem and is giving excellent performance."

For more equipment information, contact: Parker Engineering, PO Box 445, Corona, CA 91720 714/737-2287 OR Harmony Farm Supply, PO Box 451, Graton, CA 95444, 707/823-9125.



(Sutter Home continued)

for the bottles inside the filling room.

The filling room, with positive air pressure to keep yeast and bacteria out, contains a Cobert Olimpia 75-valve filler synchrolinked with a Bertolaso 12-head Delta 412R corker. There is a nitrogen blanket in the filler bowl to reduce oxygen pick-up. A cork elevator lifts corks from a low-level hopper to the corker's hopper.

After leaving the filling room, bottles are automatically checked for accurate fill level and the presence of a cork by an Industrial Dynamics unit. A 12-head Bertolaso Sigma 112 plastic capsule applicator is fed pneumatically from a bulk hopper located at floor level. A Cavagnino & Gatti cold-glue labeler (Model 84/C1-16) applies a face label on the bottles.

An Ocme Graham case-packer divides bottles into four channels and a continual-motion sorting device separates them into groups of 12. The first of six magazines automatically shoots two corrugated partitions into each 12-bottle group across the machine direction. Three more magazines shoot three remaining partitions between the rows of bottles, in the machine direction.

The partition feeders are regulated by photocells which check position of bottles for accurate feeding and allow the feeders to adjust to frequent changes in conveyor speed. With partitions in place, bottles move to a wrap-around station where pivoting levers form a shipping case around the bottles. The shipping case is magazine-fed from beneath the bottles.

The partially-formed cases move into a gluing and compression station, where the inner side-flaps are folded in, hot melt glue sprayed on, and outer side-flaps folded and compressed. The top lid-flap receives glue sprayed by a patented robotic arm moving along with the case. The flap is compressed-closed to finish the entire case-packing process in one continual motion.

After leaving the case packer, a Diagraph ink-jet coder imprints date, case number and time of casing. The cases are palletized by a Berchi model Dinamic PTF unit that operates similarly to the Berchi depalletizer at the front of the bottling line. After collating 12 cases/layer, it pushes the layer onto an intermediate platform which raises and lowers itself according to the height required by the pallet being stacked. The platform moves the 12 cases onto the pallet and returns to the collating area for another layer. Completed pallets move automatically to a Lantech stretch wrapper to receive a 0.9ml low-density polyethylene wrapper.

For more equipment information, contact: fp Packaging, 229 Ryan Way, So. San Francisco, CA 94083, 415/742-5400.

(Robert Mondavi continued)

quality and better aromatics to the new presses. He also believes that the pHs are lower due to less fracturing of grape skins.

After fermentation, Cabernet Sauvignon skins are fed to the presses through their axial feeds in order to press out the wine for the Robert Mondavi Red program. Alderson reports loading times of 20 minutes and press programs of 1.5–3 hours per batch.

The screw presses are now used as back-up presses during heavy demand periods.

For more equipment information, contact: SEN Machines, Inc., 1350 Industrial Ave. Suite G, Petaluma, CA 94952, 707/763-4844.

(Christian Brothers continued)

through the cold-water enclosure through which cascading water as cold as 35°F is directed by a customized water flow-control system onto the tubes.

The system was designed to chill up to 50 tons of grapes/hour from 85°F to 55°F. In fact, performance of the design

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has surpassed expectations and has cooled over 50 tons/hour from 90°F to 40°F. The 5-inch diameter must line with wide return bends minimizes the pressure drop through the must line, allowing a 15-hp Ragazzini piston pump, with no reduction in capacity, to push must the extra length through the chiller prior to pressing or tank settling.

The temperature of the cascading water can be adjusted for each chilling requirement. The water can be recirculated through the enclosure and bypass the ice maker, if the latter is not needed.

An existing 100-ton ammonia compressor, used to provide refrigerant to jacketed tanks, also provides the refrigeration for the ice maker, with no increase in electrical demand.

Pacific Gas & Electric, the electric utility, has granted a rebate for the installation as the ice maker has not increased the Christian Brother's energy demands during the peak period of 12 noon to 6 pm. The effect of the rebate is approximately ⅓ of the investment in the must chiller and ice maker.

For more equipment information, contact: IRAPP, Inc., PO Box 129, Healdsburg, CA 95448, 707/433-9471.

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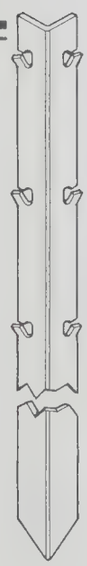
124 pages. Topics: Progress of clonal selection in Australia; Distribution of improved vine material in Australia; Oenological specification for Pinot Noir and Chardonnay; Quarantine policy for grapevines; Criteria other than yield for selection of clones; clonal selection of Pinot Noir and Chardonnay in France; Grapevine improvement in France; Viticultural and winemaking characteristics of Pinot Noir and Chardonnay. Cost of A$25 includes surface postage. Add A$10 for airmail.

To Order: Checks or money orders should be made to the order of the Australian Society of Viticulture and Oenology and sent to C.H. Brooks, c/o Australian Wine Research Institute, Private Mail Bag, Glen Osmond, SA 5064, Australia.



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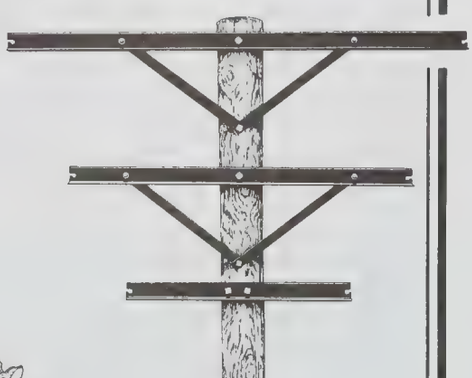

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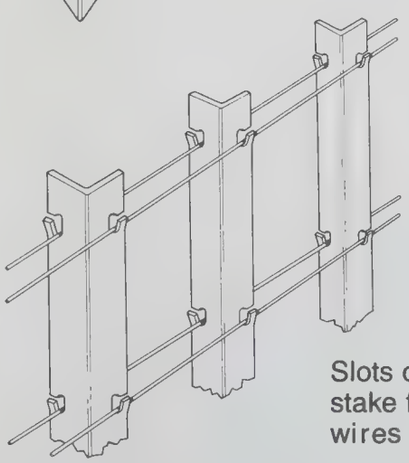

Slots on both sides of stake for moveable wires

For additional information on installations and material contact David Parrish or Rick Aldine at A&P Ag Structures, Inc., 11266 Ave. 264, Visalia, CA 93277, 209/685-8700 or 1-800/344-7273 in CA.

Part II

Strategic Insights

for Successful Premium Wine Producers

John E. Van Kirk, Ph.D., & John Schaller, M.B.A.
Xavier University, Cincinnati, OH

In Part I (Sept/Oct 1987 *PWV*), we reviewed the need for the PWP to thoroughly understand the external and internal environments that dictate the course of strategic actions. Following this analysis, the mission is defined—*i.e.*, the PWP, (Principal Wine Producer) now has direction. In Part II, we look at selecting objectives and strategic alternatives to reach stated objectives and start to focus on the Strategic Marketing Plan.

Selecting Objectives

With a thorough understanding of the external and internal settings, and a focused mission, the PWP is now ready to formulate some overall objectives.

Objectives set the stage for continually tracking the viability of the firm. Objectives fall into several broad classes such as profitability, growth, market share, etc.

Because of the extreme capital intensity of the PWP, it seems that, in addition to traditional objectives, careful attention must be given to net internal cash flow generation. Assuming that raising equity capital has severe limits for the PWP (*i.e.*, public offerings such as Chalone's are rare) and assuming that debt is limited because equity is short, internal cash generation is the key. The PWP is caught up in a sort of 'Catch 22' situation; *i.e.*, to become profitable, the firm must invest heavily long-term, but long-term capital isn't available.

Since growth uses cash in the form of working capital and investment, growth needs must match available cash flow from net (after tax) profits and depreciation. Thus, while the PWP may be getting bigger, he also may be getting closer to insolvency if the use of funds greatly exceeds the source of funds.

For most PWPs, negative cash flow is the norm for the first 10 years. Clear-cut cash flow goals allow the prudent manager to see the limits of the future, when coupled with other winery objectives.

Selecting Alternatives

The PWP makes a very significant long-term investment when participating in the wine business. Without some long-term sustainable competitive advantage, a reasonable reward for efforts extended is unlikely. A sustainable competitive advantage has many sources, but in broad terms it can be defined along three dimensions—product differentiation, low cost, and focus.[35]

Perception is a key component of product differentiation. Wine is a marketer's dream. Assuming a wine is technically sound within a given taste and price range, the consumer's perception of the wine is a major influencing factor. Buttery, rich, full, and powerful are words frequently used to describe various wines. These are perceptual in nature. People may prefer Mondavi Napa Chardonnay to Chateau Montelena Napa Chardonnay. They are both superb wines. This is not a 'real' issue; it is a perceptual one.

Because of worldwide competition, there is constant pressure on price. Costs must be controlled within reasonable competitive limits, so that the difference between selling price and costs will be adequate to cover normal fixed costs and provide adequate funds for profits.

Finally, sustainable competitive advantage may be achieved through focus. Very few PWPs are equipped to take on the whole market. The PWP should focus on something very specific, such as a product, a target consumer segment, or a limited geographical area. Focused efforts pay off, diffused efforts lose.

The Strategic Marketing Plan

Having made a product market investment and having selected a sustainable competitive advantage strategy, it is useful to define functional objectives and strategies. The elements of a good functional plan start with segment definition, followed by clearly-defined product, price, promotion, and distribution objectives and strategies.

Today's markets are dynamic. Changes occur rapidly, which make future planning difficult. For example, *Impact* offered the following forecast in 1980:

"The table wine growth rate, which was 10.5% a year in the past decade, will rise to 10.8% in the next five years and then to 11.2% between 1985 and 1990." [36]

This forecast converts to a table wine market of 528 million gallons in 1984. The market was actually 391 million gallons, or a 25% forecasting error. Sound functional strategies will assist in dealing with such dynamic market swings.

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Segmentation

A major factor in developing sustainable competitive advantage can be segmentation. Finding segments where your competitors cannot effectively respond to your market moves promotes long-term advantages. Segmentation takes on many aspects. For the PWP, the components of customer characteristics (age, income, etc.) and benefits sought (taste, selection, etc.) are the focus variables.

Our research shows that customers seek the following benefits when purchasing premium wines:[38]

Table I

	Medium-Consumer Ranking	Substantial-Consumer Ranking
Taste	1	1
Selection	3	2
Location	2	3
Price	4	4
Knowledgeable Sales People	5	5
Brand	6	6

Our research further shows that the buyers who seek the benefits shown in Table I are well-educated, married, mature (41–44), and highly paid ($45,000–47,000/year). (See Appendix I for complete breakdown.)

The significance of these findings is that PWPs have a very narrow customer base on which to concentrate. For example, in the greater Cincinnati, OH, market of about one million people, it is estimated that there are less than 10,000 medium and substantial PWCs. They are concentrated in the 40–50 age group, married, well-educated, with high income.

Geographic segmentation is another major variable for PWPs to master. In most cases, profitability will come from regional strength, not national dominance. Kroger, the second-largest U.S. food chain, generates profits by being strong in only a few major markets. Concentration of resources is the answer. Spread your forces too thin and you will neither win the battle nor defend your strategic position.

The number of cases which a PWP wishes to sell dictates the number of geographic segments to pursue. Only a fool takes on the whole market. Fifty percent of the table wine in the U.S. is consumed in just six states: California, New York, Florida, Texas, Illinois, and New Jersey, all with 11 million cases/year or more. Everyone knows this and competition is fierce.

Markets such as Massachusetts (7.7), Michigan (7.3), Ohio (6.9), North Carolina (4.3), and Connecticut (4.1) might be more appropriate geographic segments on which to focus. While the media and volume may be in New York, the profitable action is probably elsewhere. Every PWP will make his decision differently, but the target segments selected must meet criteria other than size. These criteria include:

–Ability to visit the target markets twice/year.

–Availability of the right restaurant, retail, and distributor outlets.

–Unfulfilled consumer needs.

–The markets should be large enough to allow for volume targets to be reached.

–Information needs to be available to accurately understand all aspects of the target markets.

–Financial resources should be adequate to penetrate the selected target markets.

Just as location, location, and location are the first three laws of the fast-food business, so segment, segment, and segment should be the first three laws for PWPs.

In Part III, we will deal with specific product, promotion, price, and distribution strategies.

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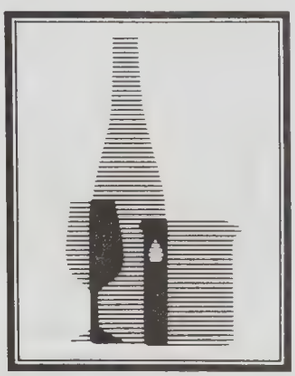

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Appendix I
Common Characteristics of Consumer Segments

	Mean	Bottles Consumed per Month: Light (1-2)	Low-Middle (3-4)	Medium-Substantial (5-9)	Substantial (10+)
Amount spent per bottle in dollars	4.97	4.70	5.04	5.21	5.07
Education: College &/or Post-Grad	78%	75%	79%	75%	79%
Divorced	10%	8%	9%	10%	12%
Married	60%	56%	56%	65%	66%
Read morning paper	78%	80%	76%	82%	78%
Read evening paper	16%	18%	14%	19%	16%
Read Cincinnati Magazine	50%	49%	40%	51%	51%
Listen to public radio	72%	73%	71%	75%	73%
Watch leading TV channel	48%	56%	44%	56%	40%
Watch public TV	37%	39%	34%	40%	35%
Subscribe to cable					
–yes	49%	56%	44%	51%	47%
–no	51%	42%	56%	49%	52%
Use coupons					
–yes	79%				
–no	21%				
newspaper		71%	70%	61%	66%
mailed (Valpak)		60%	63%	61%	68%
magazine		50%	49%	36%	47%
Bottles purchased per month	7.93	1.53	3.66	6.61	18.55
View wine as hobby	29%	18%	27%	35%	49%
Arts-oriented	3.42	3.36	3.11	3.49	3.76
Professional	4.08	4.00	3.94	4.07	4.26
Gourmet	3.54	3.21	3.28	3.71	3.97
	Above three categories are measured on a 1 (low) to 5 (high) scale.				
Age	40	37	38	41	44
Income	$43K	$40K	$41K	$45K	$47K
Income					
$50K & over	45%	36%	37%	51%	60%
Single	22%	30%	31%	21%	18%

These data collected from the following study (all percentages are percentage of the sample):

Van Kirk, John E. and Schaller, John F. 'The Demographics and Psychographics of Premium Wine Consumers'. (unpublished research study, 1986, Xavier University, Cincinnati, OH).

Footnotes

35. Aaker, David A. *Developing Business Strategies*, John Wiley & Sons, Inc., 1984, p.249.
36. 'The American Wine Market Review and Forecast', *Impact*, TASCO Publishing Corp., 1980, p.57.
37. Van Kirk, John E., and John F. Schaller. 'The Demographics and Psychographics of Premium Wine Consumers', unpublished research study, 1986, Xavier University, Cincinnati, OH, p.50.
38. *Op Cit.* Van Kirk and Schaller. p.26.

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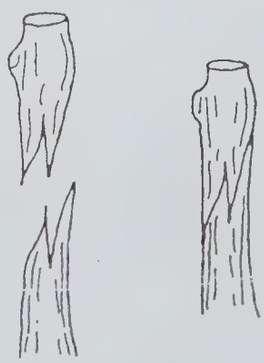

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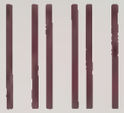

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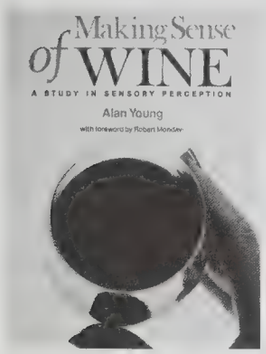

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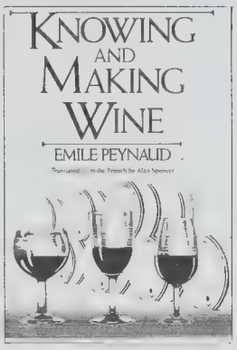

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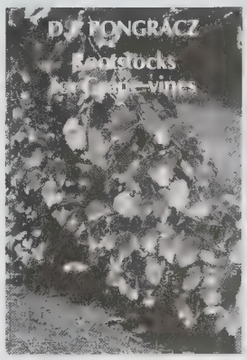

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Cuvée Bottling

To enhance riddling ability, disgorgement and, possibly, wine palatibility, some vintners add riddling aids at the time of cuvee bottling. These aids (fining agents) improve the riddler's ability to convey yeast to the neck of the bottle. The proper fining agent can make riddling much easier.

The most common riddling aids are: sodium and calcium bentonite; clarifying agent C; Adjuvant H; isinglass (Colvite); tannin (Boltane); gelatin; and diatomaceous earth.

Clarifying agent C is a proprietary bentonite preparation used with phosphate mazure; Adjuvant H is a bentonite-based agent used with tannin; Colvite is a proprietary isinglass; and Boltane is a tannin formulation. All are of European origin.

Currently, bentonite is the most popular riddling aid in the USA, added at the time of cuvee bottling in amounts seldom exceeding ½ lb/1000 gal. In Europe, calcium bentonite is frequently used (Becker 1978). Calcium bentonite produces more compact lees than sodium bentonite (Ferenczi 1966).

The major disadvantage of riddling aids is that their effects on both riddling ease and sparkling wine palatability are not predictable. Because each cuvee is different, the winemaker must wait until riddling and disgorgement to review the merits or deficiencies of the riddling aid(s) employed.

This is perhaps a primary reason why bentonite is the most common riddling aid. Because of the relatively inert nature of this clay, it seldom has a detrimental effect on product palatability at the levels employed (usually less than ½ lb/1000 gal).

Liqueur de Tirage

Wineries use various sugar sources for the Prise de Mousse. Bottlers-grade sucrose or dextrose is the most common; however, larger producers may choose to employ sugar syrups. Some use 50% sugar solutions—500 grams/L of sugar in wine. 1.5% citric acid frequently is added to invert the sugar if sucrose is used.

Theoretically, 4.04 grams of glucose, or 3.84 grams of sucrose, upon fermentation will yield 1.00L CO_2 (760 mm and 0°C) weighing 1.977 grams (Berti 1981). Actual yield is less, due to the production by the yeast of small amounts of aldehydes, volatile and fixed acids, glycerol and other entities.

In actual practice, sparkling wine producers estimate that 4.0 to 4.3 grams/L of sugar is needed to produce one gas volume (ATM) CO_2; 4.3 grams/L of sugar = 1 lb of sugar in 27.3 gal. .097 lbs/gal dextrose yields 1% reducing sugar (Munksgard 1983).

For example, if 6 gas volumes of CO_2 are required, then approximately 4.2 grams x 6, or 25.2 grams/L of sugar, are added. This will produce between 1.1–1.5% additional alcohol (V/V). If the cuvee material contains fermentable sugar, this must be taken into account.

In this country, sparkling wines contain 0.392 grams CO_2/100ml or more at 60°F. A wine containing this amount of CO_2 will exert at least 15 psi pressure at 15.56°C.

In Europe, the minimum pressure for sparkling wines recommended by the Office International de la Vigne et du Vin is 51 psig at 20°C in bottles over 250 ml capacity. Accurate determination is therefore critical. Carbon dioxide pressure in the USA is more a stylistic consideration.

Producers often add a limited amount of SO_2 at the time of cuvee bottling. Sulfur dioxide helps protect the cuvee from the harmful effects of oxygen, development of aldehydes and biological degradation. A noticeable amount of SO_2 is undesirable because of its objectionable odor and because it may inhibit fermentation and possibly produce compounds with objectionable odors.

In the base wine, SO_2 binds with aldehydes—among other things—to produce an acetaldehyde-bisulfite complex. This complex helps inhibit lactic acid bacteria. Additionally, the free SO_2, specifically the molecular free form, can have a significant anti-microbial activity.

Cuvee SO_2 levels should not exceed 60 mg/L total (Manceau 1929). The free SO_2 level is kept low (less than 15 mg/L) to avoid yeast inhibition. Such decisions should be based upon an understanding of cuvee chemistry, particularly the pH.

Nitrogen compounds are essential for the growth and development of yeast and for fermentation. Utilization of these compounds by yeast can greatly affect fermentation rates and wine palatability. Some producers choose to add a form of yeast nutrient either to the developing inoculum or to the cuvee.

The desirability of adding yeast nutrient depends upon the age of the cuvee, its chemical nature and, perhaps, production philosophy. Schanderl (1942, 1943) outlined difficulties which can occur due to such additions. Proprietary compounds produced both in Europe and America are not uncommon additives. Only materials approved by the BATF may be used. The use of yeast nutrients may be more significant in older cuvees which are nutritionally deficient.

At the cuvee bottling line a uniform mixture of wine yeast, dissolved sugar, sulfur dioxide and, possibly, riddling aids and nutrients are added to each bottle (the temperature of the cuvee should be the desired secondary fermentation temperature). This usually is accomplished by having a mixing tank with a "Guth" type mixer pointing down in front of a bottom tank valve leading to the cuvee bottling run.

If this is properly designed and operational, the yeasted cuvee leaving the tank for the bottle will be uniform for the bottling run. This is important, because the yeast cells and added sugar syrups have a greater density than the cuvee and can settle out of solution, producing bottle inconsistency. Consistency can be determined by frequent Brix measurements. Several sparkling wine producers have elaborate in-line addition systems.

Almost any filler is adequate for cuvee bottling. Some feel the necessity to slightly aerate the cuvee prior to bottle filling. Alcoholic fermentation consists of overlapping phases. In the aer-

obic phase (respiration), oxygen stimulates the production of cellular material and yeast growth. In the anaerobic phase, sugars are enzymaticlly broken down to ethanol, CO_2, etc.

The stimulation of yeast cell growth by oxygen was discovered by Pasteur and is known as the Pasteur effect. Premium sparkling wine producers on the West Coast with whom I have consulted generally do not believe this is necessary. Purposeful oxidation is usually unnecessary for yeast growth and may detrimentally affect product palatability and gushing.

If too much additional air is dissolved in the wine, it may make the final bottle unstable or 'wild' at the time of disgorgement and consumption.

When bottles containing air or nitrogen are opened, these gases immediately come out of solution as fine bubbles which then gather carbon dioxide and gush. These gases make the system unstable because their escape rates may be higher than that of the CO_2 (Miller 1966). It is therefore imperative that cuvees not be nitrogen sparged or undergo excessive aeration.

In sparkling wines, some of the gas is free and some fixed with an equilibrium between free $\rightleftharpoons$ dissolved gas $\rightleftharpoons$ combined gas (Miller 1966). Gushing (uncontrolled foaming) in sparkling wine is a sporadic, but significant, problem.

Particulate matter in the form of case dust, cork dust, fibers, particles from packaging materials, and, possibly, particles from the wine or dosage itself can cause gushing. Such particles, particularly those present in the bottle before filling, occlude very small air bubbles which act as a nuclei upon which CO_2 may come out of solution when pressure is released. The sharpness or jaggedness of the particles appears to be important because their structures occlude fine air bubbles (Rankine 1978).

Incomplete yeast riddling and potassium bitartrate crystals can also contribute to gushing. When bottles have imperfections on the inside wall, bubbles will originate from this area, again due to occluded air. The need for strict control of glass and cork quality cannot be overemphasized. Shrink-wrapped glass and predusted corks are an asset.

If gushing is sporadic, dirty bottle particulates from packaging or corks are often the cause. Entire batches that gush are often the result of air or nitrogen in the sparkling wine, excessive CO_2, insufficient chilling and/or unknown factors involving wine chemistry (Rankine 1978).

Gushing of red sparkling wines often occurs when they are opened. To help reduce this potential problem some producers fine their young cuvees with gelatin to lower the tannin content.

If a sparkling wine contains a lot of dissolved air, or nitrogen under pressure, in addition to its CO_2, gushing may occur (Rankine 1978). For this reason, nitrogen sparging and excessive aeration of the cuvee wine is undesirable. The solubility of air or nitrogen is very low under pressure.

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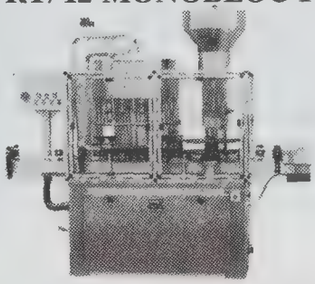

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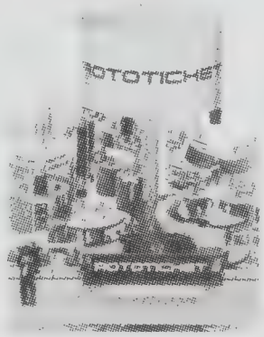

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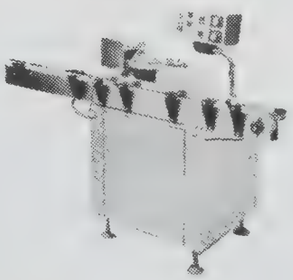

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1986 TAX REFORM ACT

Winery Inventory Capitalization Rules

Greg Scott
Price Waterhouse, San Francisco, CA

The 1986 Tax Reform Act (86 TRA) included many changes that, as noted in *Practical Winery*, Jan./Feb. 1987, have a significant impact on the operations of vineyards and wineries. The area requiring the most substantial change for many wineries involves new rules for determining the tax cost of inventory.

While vineyards in the past have been able to use the cash method, wineries, as producers of wine, have always been required to use the accrual method of accounting for tax purposes. This includes allocating the costs of production to inventory so that these costs are held as a cost of inventory and no tax benefit is realized from the costs of producing the wine until the time the wine is sold.

The 86 TRA changes regarding inventory costing increase the costs which must be allocated to inventory, provide some guidance on how these costs are to be allocated to inventory, and define the production period during which costs are to be added to inventory. The 86 TRA changes do provide simplified resale and production methods. However, these simplified methods may not be the most beneficial approach in every situation. This presentation does not address the requirements with respect to retail and wholesale operations, but rather addresses how the rules affect wine producers.

The Old Rules

Prior to the 86 TRA, inventories were required to be costed in accordance with the full absorption regulations. These regulations required allocation of direct costs (grapes, bottles, corks, capsules, foils, direct labor) and indirect costs to inventory.

Indirect costs which had to be included in inventory included repair, maintenance, utilities, rent, indirect and supervisory labor, indirect materials and supplies, tools and equipment, and quality control and inspection. Certain costs were specifically excluded from allocation to inventory and were allowed as a current expense. These included marketing, advertising, selling, distribution, interest, research, product development, engineering, the excess of tax depreciation over that used for financial accounting purposes, income taxes, and general administrative costs, including officers' salaries attributable to the operation of the business as a whole rather than directly to the production activity.

A third category of [illegible] ventory if the costs [illegible] for financial accounting purposes. This included taxes, depreciation, employee benefits, scrap, losses, rework, factory administrative costs, officers' salaries, and insurance.

The New Rules

For years beginning after December 31, 1986, inventories will have to be costed, including the costs outlined in the 86 TRA and the new temporary regulations which have been issued with respect to the capitalization and inclusion in inventory cost of certain expenses. The specific changes in the expenses which now must be allocated to inventory will be discussed below.

Time Period Involved

Prior to the 86 TRA, application of the full absorption regulations varied with the three categories of costs outlined above and the issue of what the 'production period' was during which costs were required to be allocated to inventory.

Approaches taken by wineries varied dramatically. Many wineries were not in compliance with the full absorption regulations at all; others applied differing interpretations of what the production period was during which costs were allocated to inventory.

Specifically, the *Heaven Hill* and *Van Pickerill* cases supported the position that for wineries, the production period ended when fermentation was complete and one had wine. The concept was that during the ageing period, one was not physically doing anything to the wine to transform a raw material into a finished product. There was no longer manufacturing as compared to during the crush and fermentation process. Bottling costs did have to be inventoried because, again, one was physically packaging the product, and packaging costs were required to be inventoried.

The Senate Finance Committee Reports on the inventory costing changes enacted in the 86 TRA specifically refer to the decisions in *Heaven Hill* and *Van Pickerill* and, without inference as to the validity of these cases under law prior to the 86 TRA, overrules the result reached in these cases.

The report states, "In the case of the property such as wine that is aged before it is sold, the production period includes the ageing period." Therefore, it is now clear in the legislative history that wineries will be required to allocate the cost of making wine to inventory for both direct and indirect costs from the time of crush until the wine is ready to be held for sale. Exactly when the wine is ready to be held for sale is a determination that will vary depending upon the facts and circumstances unique to each winery.

If a winery regularly and routinely crushes and ferments grapes for sale as bulk wine, and holds the wine for sale immediately as bulk wine, their production period should end at the time that the wine is ready to be held for sale as bulk wine (the treatment of storage costs will be discussed below).

If a winery, however, routinely cellars the wine for a period of time before bottling and then holds the wine for some period of bottle ageing in addition to this before the wine is ready for release, then the costs will have to be included in inventory and not deducted from the time of crush until the time that the wine is ready to be released.

The impact to wineries is the timing of when a tax deduction is received for these costs. The net result is a deferral of these costs until the year the wine is sold and the income is recognized from the sale of the wine. Only then will the costs incurred during the production period be deducted for tax purposes as cost of goods sold.

Additional Costs to be Allocated to Inventory

Additional costs to be allocated to inventory include storage and warehousing; purchasing costs; product development costs; handling, processing, and repackaging; general and administrative costs; and interest (in certain cases).

Interest is to be allocated to inventory if the production period exceeds two years or if the production period exceeds one year and there is a cost exceeding $1 million. It is not clear whether this cost is a cost in the aggregate for all of the items being produced exceeding one year, or a cost on a per item basis. Until further guidance is provided, it would be reasonable to take the position that the cost is on a per unit or per item basis, and thus the $1 million should not apply to the wine industry.

However, to the extent that wineries are producing wines for which the production period (date of crush through date of release) exceeds two years, interest will have to be allocated to that portion of the inventory.

Interest to be allocated to inventory is to be computed on an avoided cost basis. In essence, interest is first allocated to the cost of production to the extent that the debt would have been reduced had the cost of production not been incurred but rather those funds had been used to repay the debt. This includes interest on the cost of equipment used to make wine.

Costs which still do not have to be allocated to and included in inventory include marketing, selling, advertising, general and administrative costs not attributable to production, research and development, income taxes, depreciation on idle equipment, and repairs not attributable to production facilities.

Direct costs will continue to be required to be included in inventory as under prior law; however, wineries may be required nonetheless to allocate more direct costs to inventory than in the past, based upon the new definition of what constitutes the production period.

Direct costs include grape costs, packaging costs, wages, utilities for the winery and winery equipment, and other costs directly related to the production process. These costs are to be allocated to the wine or wines being produced based upon some sort of direct tracing, specific identification, or some reasonable allocation.

While some wineries do have employees completing time cards to identify specifically what vintage and varietal the employee was working on, this is not always practical, and thus some reasonable allocation is usually necessary.

One supportable approach would be to divide the costs into categories according to function: crushing and fermenting; cellar, bottling, and case goods storage.

Costs of these functions would then be allocated to the various wines on hand during the year based upon the weighted

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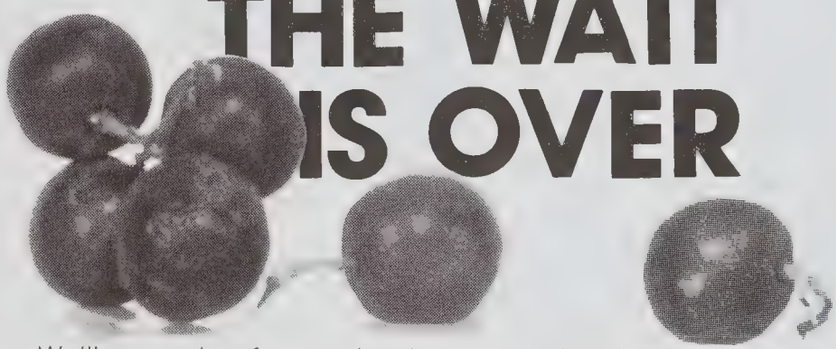

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average monthly gallons or cases in each step of the process during the year. For example, crushing and fermenting costs would be allocated based upon the relative gallons resulting from the current year's crush. Cellar costs could be allocated based upon the weighted monthly average of gallons in bulk in the cellar.

Example: If 1,000 gallons of Cabernet Sauvignon were in the cellar for 12 months and 1,000 gallons of Chardonnay were in the cellar for 6 months, the cellar costs would be allocated 12/18 to the Cabernet Sauvignon and 6/18 to the Chardonnay.

Bottling costs would be allocated based upon the relative gallons or cases bottled during the year, and storage costs allocated based upon the average monthly cases in case goods storage in the same fashion as cellar costs. This should represent a reasonable allocation method for allocating the various costs to the wines produced which should not result in a distortion and should be acceptable under the temporary regulations issued to implement and explain the application of the 86 TRA changes.

Before the costs of these various functions are allocated to inventory, general and administrative costs will have to be allocated to these various functions. The extent to which general and administrative costs in each winery support these functions will vary depending upon the facts and circumstances of each winery.

Such functions as the administration and coordination of production, personnel, purchasing, raw materials handling, warehousing, administration, accounting, data processing, security, and legal all are costs which will require some study of the purpose of the function to determine the extent to which it supports the winery's production process. Wage-based costs, including employee benefits, for example, should be allocated based on the allocation of wages.

Regulations even require that some service functions may support other service functions which ultimately support production, and therefore a two-step allocation, first between service departments and then from the service departments to the production process (to the extent that it supports a production process) will be required under the 86 TRA.

Clearly, this requires an examination of the chart of accounts, cost categories and cost centers of each particular winery to decide, define, and document the rationale behind the methodology to be adopted by each winery to implement these 86 TRA changes.

Documentation of the rationale supporting the methodology adopted to implement these changes by each winery will be an important step in defending the methodology used in the event of a future examination by the taxing authorities.

Regulations also identify several types of costs as generally not requiring allocation. These include general business planning and general budgeting functions; the financial accounting function—producing financial reports, economic analysis, or forecasting; a tax department; shareholder and public relations; internal audit; and, as previously noted, marketing, selling, and advertising.

A simplified method is provided in the regulations for adding these costs to inventory based upon the ratio of these additional costs which should be in inventory to the previously-used full absorption cost. This, however, still requires a study and documentation of how one is to determine what costs should be allocated to inventory and only eases the burden of tracking these costs to each specific wine by adding a factor based upon a ratio of these additional costs to the other inventory costs in total. This may not be most beneficial in the case of all wineries.

LIFO Implications

Wineries on the last-in/first-out (LIFO) method of accounting

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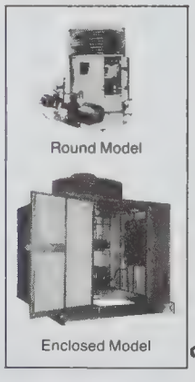
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will be required to restate their LIFO costs based upon the rules outlined above for purposes of computing future years ending inventory and cost of goods sold on LIFO. This presents particular difficulties when the LIFO base-year costs are extremely old.

Determining what costs should have been allocated and how they should have been allocated for layers that are several years old may be at best difficult, if at all possible. The regulations do provide some guidance on recosting old LIFO layers if the detail is not available.

Making the Change

As noted above, each winery will be required to restate its beginning inventory for the first taxable year beginning after 1986. The difference between the beginning inventory as costed under the 86 TRA changes and under the old methodology will be an increase to inventory which will be recognized as an expense in cost of goods sold as the wine in beginning inventory is sold.

This adjustment, known as a 'Section 481 adjustment', will be spread to income over a period not exceeding four years. Therefore, if the wine in beginning inventory will be sold faster than the adjustment will be recognized in taxable income, there may initially be a tax benefit to the winery. The period and amount of the adjustment to be spread to each year in the period will depend upon how this difference built up over the four prior years.

To determine how the adjustment will be spread, the winery will not only be required to have recosted its beginning inventory for their first taxable year beginning after 1986, but will also be required to compute what the adjustment would have been for each of the three prior years. If 75% or more of the adjustment arose in the first, second, or third preceding year, that portion of the adjustment will be spread over three years, with the balance recognized in the fourth year. If more than 75% of the adjustment did not arise in those three years, the adjustment will be spread equally to the four years beginning with the first taxable year beginning after 1986.

Example: If the amount of the adjustment to beginning inventory is $1,000 and the highest amount of the adjustment for the first, second, and third preceding years would have only been $700, then the $1,000 adjustment would be spread $250 to each of the four years beginning with the first year after 1986. If, however, $870 of the adjustment arose during the three years, $290 would be added to taxable income for the first three years beginning after 1986, with the remainder, $130, recognized in the fourth year beginning after 1986.

Therefore, wineries whose costs or inventories have grown substantially in recent years will be more likely to recognize the adjustment more quickly than wineries whose inventory costs and quantities have been at more consistent levels.

Summary

Clearly, the changes require a complete review and possible revision of each winery's inventory costing methodology. Wineries first must review each cost center and category to determine if:

1) it is a direct cost or indirect cost allocable to inventory; and
2) if it is an indirect cost, on what basis it should be allocated to inventory.

Appropriate information then will have to be gathered in the accounting information system to enable the allocation, based on the methodology selected, and the methodology should be documented. The beginning inventory must then be recosted based on this methodology in accordance with the 86 TRA changes, and the inventory for each of the three prior years must also be recosted.

The timing over which the adjustment will be recognized in taxable income should be determined so that the winery will then be better able to plan for future taxable income as a result of the 86 TRA. The rules are complex, and, since this is an area where much revenue is expected to be generated as a result of the 86 TRA, it will likely be an area of increased focus by the taxing authorities.

Finally, wineries may find it beneficial to conform the method of costing inventory for financial accounting to that used for tax purposes under the 86 TRA.

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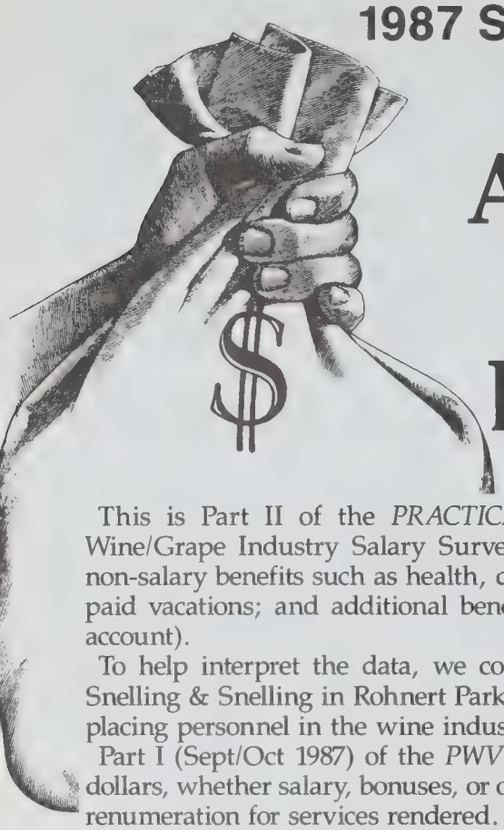

1987 Salary Survey Part II

A Mixed Bag of Benefits

This is Part II of the *PRACTICAL WINERY VINEYARD* Wine/Grape Industry Salary Survey. In Part II, we discuss non-salary benefits such as health, dental, and life insurance; paid vacations; and additional benefits (house, car, expense account).

To help interpret the data, we consulted Donna Parker of Snelling & Snelling in Rohnert Park, CA who has experience placing personnel in the wine industry.

Part I (Sept/Oct 1987) of the *PWV* salary survey dealt with dollars, whether salary, bonuses, or other kinds of direct dollar renumeration for services rendered. The subject of non-salary benefits is given special attention in Part II of this report. Such benefits are considered by most winery owners and employees to be a secondary form of compensation, but crucial to job stability, as discussed below.

In all the years in which I have hired employees—for Crown Zellerbach, Levi Strauss, and now the wine industry—it has never ceased to amaze me how little attention is paid to the subject of non-salaried benefits.

Salary is the major symbol of success in America. When budget time comes around for winery owners, a major issue always is, "What will I pay employees next budget period?" Yet, a paycheck is only one of many important factors contributing to job satisfaction.

All major studies in the past ten years documenting why people change their jobs have clearly shown that employees do not leave primarily because of salary dissatisfaction. In fact, salary is usually the fourth or fifth-rated factor among reasons cited for leaving a job.

Lack of positive management feedback is frequently the main reason employees leave. They feel they are not appreciated by management. Surely, showing appreciation for employees is not an expensive item for employers, but it is too often ignored nonetheless.

In the increasingly complex world of the wine industry, adequate paid vacation time has become an important element in the job satisfaction quotient. If your present employer offers you three or four weeks vacation, and a prospective employer offers you only two weeks, you may decline to make a move. Thus paid vacations can be a positive, and not very costly, aspect of job enhancement.

Survey Responses

	YES	NO
Health Insurance	227	18
Dental Insurance	174	71
Life Insurance	152	92
House	20	225
Car	59	186
Expense Account	75	170

Only 50% of PWV respondents receive a bonus. Bonus programs can be tied to current year profitability (relative to the previous year), limiting the employer's financial exposure while creating a future incentive for winery employees.

Most winery employees do have health insurance available to them. However, only 71% are offered dental insurance and only 62% are offered life insurance.

Unlike Japan, America is moving away from providing employees with such amenities as housing and company automobiles. Our survey shows only 8% of respondents have housing available to them and only 24% are provided with a company vehicle. Further, only 30% of respondents have an expense account available for their use.

Getting back to paid vacations, the following vacation analysis indicates that there is no standard vacation policy in the wine industry.

Survey Responses on Vacations

1 Week:	Responses	Years of Tenure
	3	0-1
	2	2
	1	3
2 Weeks:	**Responses**	**Years of Tenure**
	23	1
	34	12
	18	3
	14	4
	7	5
	6	6
	6	7
	8	8-13
3 Weeks:	**Responses**	**Years of Tenure**
	3	1-2
	3	3
	4	4
	13	5
	17	6
	17	7
	11	8
	15	9-12
	51	3-17
4 Weeks:	**Responses**	**Years of Tenure**
	4	2-4
	4	4
	3	6-8
	6	10
	7	11-13
	7	14-25
5 Weeks:	**9 Responses**	**5-43**

For example, respondents with one year of tenure at a particular winery received anywhere from one week to three weeks paid vacation. Many employees with 1–4 years of job tenure received only two weeks vacation/year. No respondents with less than five years of experience received five weeks paid vacation.

As mentioned above, paid vacation is becoming an important issue in the wine industry today; as such, winery owners should consider creative ways of packaging it. One option is a 'time away from work' policy. This means an employee is allowed a certain number of weeks away from work each year, which may be taken as sick leave, paid vacation, or holidays. This gives the winery employee greater freedom, yet limits cost to the employer.

The wine industry should set standards for non-salary benefits. To do so, it should seek guidelines in successful manufacturing industries rather than in agriculture. As competition for personnel becomes increasingly important in the success of companies in the wine industry, non-salary benefits will become a more and more important factor in the recruitment and job satisfaction of employees.

What's Available in:

FILLERS & CORKERS

The Compleat Winemaker

Filling and corking equipment for still and sparkling wines up to 50 bpm is available. American motors and electrical are installed on foreign equipment and installation of the equipment is provided. Repair parts and service for the equipment are available.

There is a 12-spout semi-automatic rotary filler with s/s contact parts made by SIEM which can handle up to 24 bpm.

There is a monobloc 10–SIEM 10-spout low-vacuum filler and single-head corker which can handle up to 38 bpm (750ml). Change parts for other bottle sizes are available. Options include a vacuum mouthpiece on the corker with a Gast vacuum pump, a conveyor drive end with small collection table, and a conveyor idler end with a small bottle feed table.

Higher speed filling machines are available. (Specifications and a price quote are available on request.)

Table-top syphon fillers with all s/s contact parts capable of handling 144 bottles/hour per spout are available with two to six spouts.

A SIEM semi-automatic corker can handle up to 24 bpm of still wine and can be adapted for champagne bottles. A floor-model corker is available for one person to cork about 500 bottles/hour and is adjustable from 375ml to 1.5L.

Inquiries to: The Compleat Winemaker, 1219 Main St., St. Helena, CA 94574, 707/963-9681.

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fp Packaging, Inc.

A broad range of filling machines from Cobert, a division of Bertolaso, is available including the Cobert Olimpia low-vacuum filler. Bertolaso also manufactures corkers for applications from 15 bpm to over 400 bpm for still and sparkling wines.

The smallest Olimpia filler has 12 valves and will fill 750ml bottles up to 40 bpm. The largest Olimpia filler is 105 valves and will handle in excess of 600 bpm. Olimpia stainless steel valves are designed to minimize turbulence and foam. No tools are needed to dismantle the valves for cleaning or adjustment of fill height.

The Olimpia filler has a nitrogen blanket feature in the filler bowl to minimize oxygen pick-up as low as 0.2 ppm. A CIP system is available to enable an operator to sterilize the Olimpia easily and quickly without dismantling any parts. Either hot water or chemicals can be used in an open or closed loop system.

The Olimpia filler can be synchrolinked to a Bertolaso corker and/or bottle cleaner. The machines are connected mechanically and driven by the filler. Bottles are conveyed by a long infeed screw between machines. Synchrolinking improves bottle handling, saves space, and reduces noise levels.

Olimpia offers options such as safety guards, special drive units, speed automation, automatic centralized lubrication, fast rinsing of the bowl, bowl and valves in AISI 316 s/s, and centering cones for the filling valves.

The Cobert Suprema counter-pressure filler ranges from 16 valves to 120 valves with speeds from 20 bpm to 700 bpm. The Suprema can be equipped with air pre-evacuation and self-leveling to minimize oxygen pick-up and allow precise fill levels.

The smallest automatic Bertolaso corker is the in-line Gloria 106R model for still wines. The Super Gloria 110S and 110R are single-head, in-line corkers with a maximum capacity of 60 bpm. The larger Delta series of corkers are rotary machines for higher production requirements.

Bertolaso corking heads have a s/s four-jaw compression system. Before the cork is inserted, an air jet cleans the cork bottom. Before corking, a vacuum can be pulled and inert gas can be injected to reduce oxygen in the head space. The jaws can be heated to a constant temperature to insure sterility and are easily removed for cleaning and maintenance.

The Delta models can be mechanically synchrolinked to the filler. Other options include digital electronic tachometer, remote speed control, electrical lifting of the upper part of the machine and drives utilizing a frequency inverter.

Inquiries to: fp Packaging, 229 Ryan Way, PO Box 881, So. San Francisco, CA 94083, 415/742-5400.

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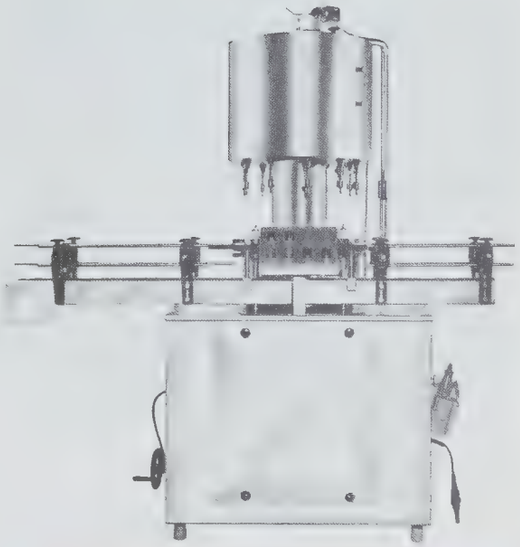
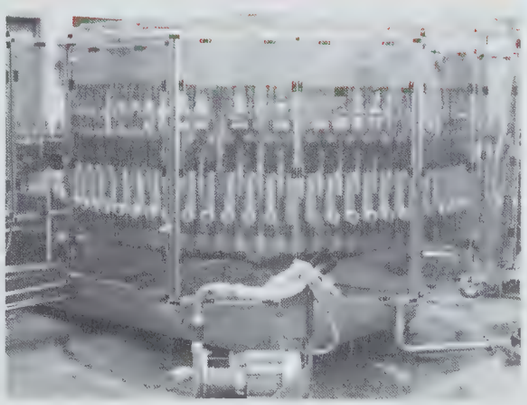


Plop, plop, fizz, fizz–oh what a hassle it is . . . What could be more frustrating than a mal-functioning, worn-out, bottling line? Starting with this issue, *PWV* offers an up-date on in-house bottling equipment with information on fillers and corkers.

The Jan/Feb 1988 *PWV* will include the newest in labelers, and in the March/April 1988 *PWV* we will cover bottle cleaners, spinners, case-packers, de-palletizers, palletizers, etc.

Today, there is available a variety of fillers and corkers designed to move bottles smoothly, fill precisely and cork uniformly. Much of the guesswork has been eliminated. If you have any question whether or not your present system is a cost-effective, optimum-capacity unit, offering you the flexibility you need, contact the following suppliers for information regarding their equipment–and please tell them *PWV* sent you.



KLR Machines, Inc.

KLR represents two manufacturers of German bottling equipment: TLG and WST. TLG builds low-vacuum fillers. WST (Winterwerb & Streng) provides a complete line of bottling equipment including gravity and counter-pressure fillers and champagne processing equipment such as dosers, levelers, bottle washers, crown cappers and de-cappers, which can be self-contained or combined in monobloc with corkers and other sealers, wire-hooders, capsule dispensers, spinners and crimpers.

TLG low-vacuum fillers range from 12 to 28 filling valves (2,400 to 5,600 bph). The 12-value TLG filler is also available in monobloc construction with a single-head four-jaw corker. The filler is all s/s and includes continuous variable fill-height adjustment, a motorized product infeed ball valve, anti-splash fill-tube covers, float fill-bowl level control, conveyor and conveyor drive motor. All corkers (from 1 to 12 heads) can be provided with vacuum and cork lock heater.

The newest development from WST is the Compenda-II gravity filler designed for minimum oxygen pick-up. The Compenda-II is a bottom filler which provides headspace inerting during filling via three-channel long-tube filling valves. The Compenda-II filler is available in sizes from 8 to 56 filling valves for outputs of 2,200 to 18,000 bph.

WST offers Multima champagne filling equipment. There is a Dosana dosage filler available with 3–6 heads which is a counter-pressure gravity filler which adjusts fill heights and adds dosage in the same unit.

Inquiries to: KLR Machines, Inc., 1925-B Francisco Blvd East, San Rafael, CA 94901, 415/456-4774; or 47 West Steuben St., Bath, NY 14810, 607/776-4193.

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Process Engineers, Inc.

Process Engineers represents Stone Sa of Burgoin–Jollien, France who manufacture a full line of bottling equipment. Fillers and corkers may be ordered as separate units or as a monobloc assembly, where the filler and corker are driven by the same drive train.

Fillers are available with gravity, low-vacuum or pressure-assisted fill. The fill height is adjustable and multiple bottle sizes can be accomodated. The machines range from 12 valves (35 bpm) to 60 valves (225 bpm).

Stone corkers are of two styles: 1) non-rotating, single-head for capacities up to 60 bpm and 2) multi-head rotary corkers in 4, 6, 8, 12-head design with capacities up to 330 bpm.

All product contact parts are stainless steel or food-grade plastics and rubber. Stone equipment is designed for easy cleaning and maintenance. Process Engineers can engineer, supply and install complete lines or parts thereof.

Inquiries to: Process Engineers, Inc., 3329 Baumberg Ave., Hayward, CA 94545, 415/782-5122.

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Prospero Equipment Corp.

Prospero Equipment Corporation is the exclusive US distributor for the GAI Corporation line of filling equipment.

GAI fillers and monoblocs are of all s/s construction and can be steam sterilized. Filling rates between 1,000 and 3,500 bph are available. Bottle sizes of 187ml to 1.5L can be filled on the same machine by replacing star wheels.

Filling is done by gravity from GAI's bottom-filling bowl. Low-vacuum is also

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available. A new GAI spout design eliminates dripping and provides minimum oxygen pick-up.

The filler has a filler bowl sensor that controls the wine level. As the bowl reaches maximum capacity, the sensor slowly shuts an 'Electrovalve' servo butterfly valve in the base of the machine. The slow operation prevents 'water hammer' in the wine hose that could cause filtration problems. The sensor can also stop the feed pump. As the filler bowl level falls, the pump will be started again. The bowl never overflows and is blanketed by inert gas at all times.

Following the fill to within 1mm of the desired height, the bottle neck is sparged with inert gas prior to corking. No tools are required to open the cork-jaw chamber for cleaning. Vacuum corking and hot jaws are available.

All types of closures from corks to pilfer proofs can be handled. The 1002 series of machines can be converted from corks to crown caps or screw caps very quickly. GAI builds in-line and semi-automatic corkers and special machines for champagne production.

Inquiries to: Prospero Equipment Corporation, PO Box 243, Pleasantville, NY 10570, 914/769-6252. In California: 840 Piner Rd. Suite ff114, Santa Rosa, CA 95401, 707/523-2900 OR 715 Arroyo Ave., San Fernando, CA 91340, 818/365-4403. In the Northwest US: Steve Scholz and Assoc., 31960 Sharbonneau Dr. #105, Wilsonville, OR 97070.

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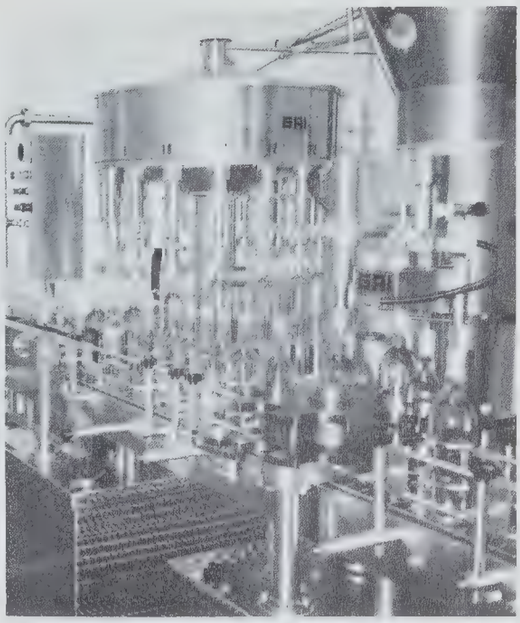


R.L.S. Equipment Co., Inc.

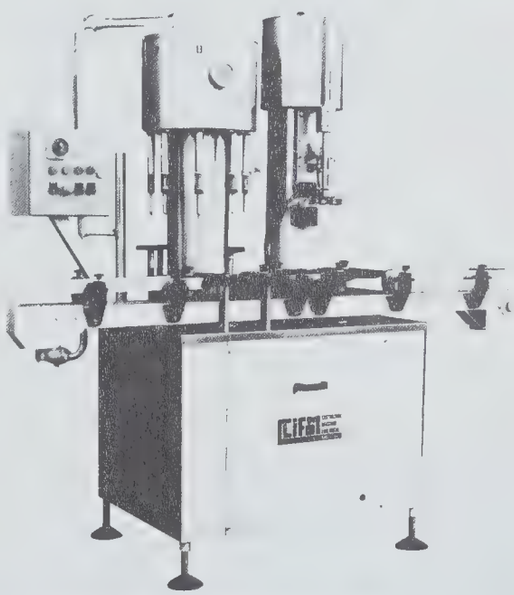
R.L.S. Equipment Co., Inc. can supply Premiere Clifom monoblocs. These filling machines come in various sizes from 8 to 32-valve units and can be run with a speed variation of 1–5.

Various monobloc combinations are available such as: filler, corker, tin-lead capsule spinner; filler, corker, capsule heat-shrink unit; or filler, corker, pilfer-proof capper or crown capper.

The fillers are gravity types with low-vacuum and all s/s contact parts. Fill heights are adjustable. Premiere Clifom fillers come equipped with all electronic probes in the filling bowl to assure an even flow of wine to the machine to minimize oxygen pick-up. Systems for air evacuation from the neck of the bottle and filling with an inert gas is available with the monoblocs. An 'Antiox' device can be fitted before the filler for evacuation of the air and filling with an inert gas to prevent oxidation.

Corking machines on the monoblocs are manufactured by AROL of Italy and are completely automatic. The corkers come in various sizes from 2,000 bph to 22,000 bph and have 4-piece iris cork jaws. There is an 8-head unit that will handle 1,250 bph and larger units handling up to 9,000 bph.

Premiere Clifom also builds the RDI series, a free-standing filling machine with vacuum assist for filling non-carbonated liquids and is available in units with 10 to 50 valves. The unit has two s/s holding tanks, the first for holding the product



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and the second for the vacuum and product over-fill. All parts of the RDI series are s/s and can be cleaned with steam or chemically sterilized. There is a pneumatic lifting system which is a closed circuit air system minimizing air consumption and allowing for automatic height adjustment of various size bottles. Upon request, all fillers can be equipped with an inert gas injection system.

Bottling machines can be customized, and when purchased from R.L.S. Equipment Co., a technician is brought in from the manufacturer to instruct personnel on the most efficient operation and maintenance of the system.

Inquiries to: R.L.S. Equipment Co., Inc., PO Box 282, Egg Harbor City, NJ, 08215, 609/965-0074, or 1-800/527-0197.

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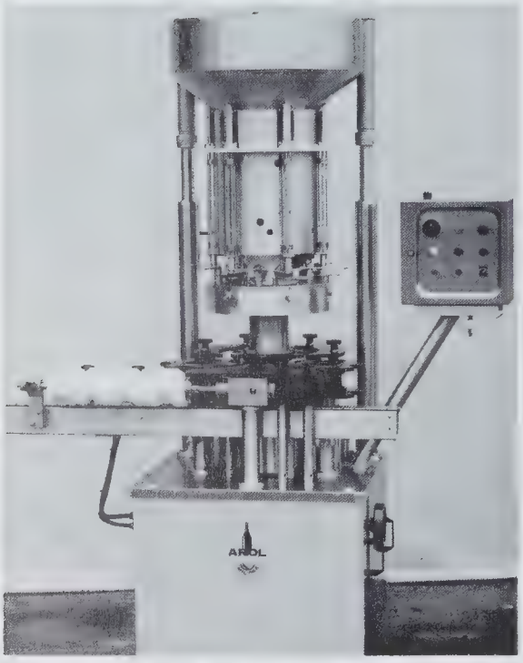

Scott Laboratories, Inc.

Automatic corkers for a wide range of bottling line speeds are available. AROL corkers and stoppering machines for still wine corks, champagne corks, bartop corks and plastic champagne stoppers are sold and serviced by Scott Laboratories.

AROL Saturno corkers feature s/s construction, four-jaw closure and a vacuum system. A vacuum system is also available on the AROL bartop corking machine. Automatic rotary corkers are available in 4, 6, 8, 12 and 16-head models. The Cometa single-head automatic corker is available to handle 2,000–3,000 bph and change parts are available to handle champagne corks.

Sabat disgorging line equipment for methode champenoise production offers semi-automatic and automatic line operation including a monobloc corker/wirehooder. There are three Sabat corker/wirehooder models: SM07D (700 bph), SM15D (1,500 bph), and SM30D (3,000 bph). These machines can be equipped with a cork feeder and an automatic wirehood dispenser.

Stork Bepak vacuum fillers are available in a complete range from 12 to 125-valve filling machines. Stork fillers are available as single units, monobloc units with bottle closure machine or as part of a complete 'turn-key' high-speed bottling line.

Inquiries to: Scott Laboratories, Inc., 2955 Kerner Blvd., PO Box 9167, San Rafael, CA 94912, 415/457-8460 OR 800/821-7254 outside California.

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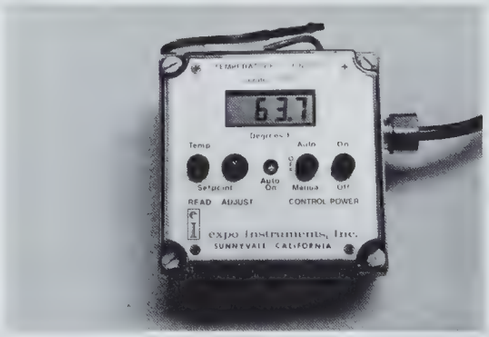

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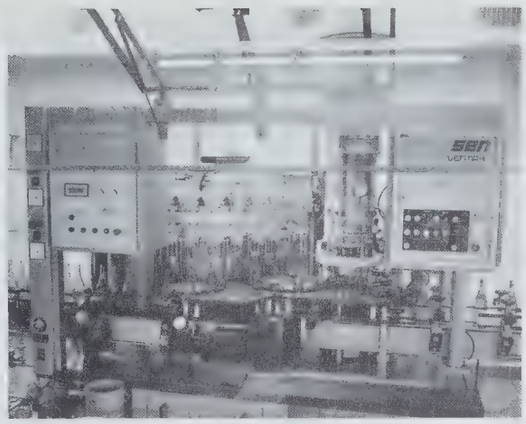


Low-vacuum fillers, isobarometric fillers and pressure fillers with outputs up to 1,200 bpm and corkers are available from SEN Machines, Inc. The low-vacuum filler models including the Tirax, Fulla and Compacta H3, which can handle between 30–150 bpm, are designed for small and medium-size wineries.

The Compacta Tronic is an isobarometric gravity bottom-filler with electronically controlled valves, allowing adjustment of fill height and providing oxygen pick-up below 0.5 ppm without sparging of the bottles. The Compacta Tronic is available in models that can handle 50–1000bpm.

The Venta and Rola pressure fillers for carbonated and still wines can be equipped with a pre-evacuation device, pre-sparging of the bottles, fill height correction via topping with inert gas and other options allowing customizing to individual requirements.

All SEN fillers can be supplied with either monoblocked corkers and/or cappers or can have a common-drive corker/capper.

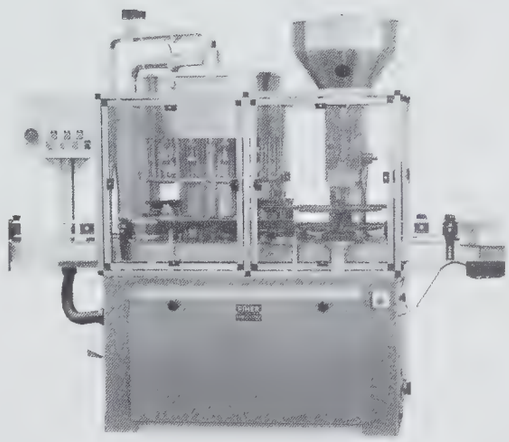
The SEN Greif and Vitella corkers feature a low-maintenance four-piece jaw and vacuum device and are available with one to 16 heads.

SEN fillers and corkers can have a manual or fully automated fill height adjustment, and automatic central lubrication. These units require low maintenance.

Inquiries to: SEN Machines, Inc., 1350 Industrial Ave., Suite G, Petaluma, CA 94952, 707/763-4844; OR Juergen Loenholdt, RD 1, Rte. 14, Himrod, NY 14842, 607/243-7568.

PLEASE SEE OUR AD PAGE 45

Tecnipac, Inc.



While better known for labelling machines, Tecnipac has recently enlarged their product line to include monobloc fillers and corkers, as well as an automatic capsule distributor.

The monobloc filler/corkers are available in 9, 12 and 16-valve configurations for filling speeds of up to 3,000 bph. They utilize continuous motion and a low-vacuum filling system, providing constant fill levels and sterilization capability.

A blow cleaner on the corking head is standard, and vacuum application or inert gas injection can be ordered as an option. There is stainless steel construction throughout, and safety interlocks on all starwheels/feedscrews to protect against bottle jamming. The capsule distributor is a simple design placing up to 3,000 capsules/hour, requiring only occasional operator attention for reloading. A 2,000 bottle/hour unit is also available, and both are are free-standing and easily attached to an existing conveyor.

Inquiries to: Tecnipac, Inc., 3800 Main St, Suite 6, Chula Vista, CA, 92011, 619/428-4116.

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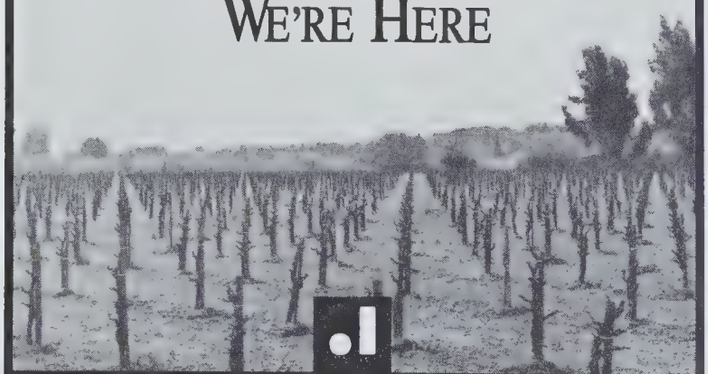

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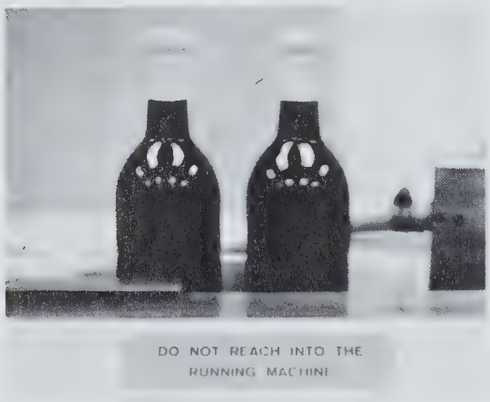
A Close Look at Bottling Line SAFETY



Lance Bischoff, Group Safety Consultant
State Compensation Insurance Fund

Julio works at an award-winning winery. He has years of experience on the bottling line. He also understands the frustration of operating tempermental machinery. Julio (fictitious name, real story) is responsible for operating the labeling machine. It isn't easy, because the glue dispensing unit often clogs up and has to be cleaned.

One day, in the middle of a busy bottling run, he decided that the easiest way to unclog the glue unit would be to allow the labeling machine to keep running at a slower speed. He reached into the machine with a rag, the rag got caught up, and his hand was pulled into the labeler. Luckily, extensive surgery saved his hand.

The bottling line supervisor, although very distressed by this incident, did not see how such a foolish act could have been prevented. After observing the bottling line and assessing present safety devices, I offered him several recommendations to safeguard against a re-occurence. Let's take a closer look at these recommendations, and apply them to bottling lines in general. We'll examine four areas: 1) Machine Safety, 2) Maintenance, 3) Risk Management, and 4) Employee Training.

Machine Safety

In the eyes of a safety professional, an OSHA investigating officer, and a manufacturer, machine guarding is of critical importance. Accidents involving misplaced, malfunctioning, or removed machine guards are always serious, sometimes fatal. Machine guard claims can also involve highly expensive legal suits.

The machine Julio operated was not amply guarded due to the age of the equipment. If your equipment does not have, or never did have, barriers to prohibit hands and fingers from entering pinch areas, you should do what many wineries already have done—design and install your own guards. Using plexiglass to allow visual inspection, they can be hinged or bolted near the worker's station. Modern equipment already has these features installed.

The labeler Julio worked with invited accidents. In fact, a minor slip of the hand could result in disaster. A simple plexiglass barricade between the worker and the exposed moving machinery could prevent this. Wire mesh screens are also helpful and can be shaped more easily into areas with corners.

Shut-off devices are also critical features of bottling lines. Emergency stops should be easily accessible at each work station on the line. Julio's winery had this capability. Some industry production lines not only have shut-offs, they also have two-hand devices that have to be pushed for each operation. Probably impractical for the continuously moving bottling line, they are worth considering for certain machines.

The problem is obvious, though, isn't it? Once a machine is running, it wants to keep going. It has no feelings or anticipation of human error. You have to design your own precautionary measures and devices. Manufacturers often will have suggestions and may even retrofit equipment in some cases.

Maintenance Procedures

It's critical that a machine be completely shut-off during maintenance, cleaning, or adjustment. This policy was not followed at Julio's winery. Most modern conveyor-related businesses hate this procedure because it shuts down the whole line, but there are no alternatives.

For the labeler, I recommended an electrical panel box on the machine, with a padlock for the supervisor. A tag on the box in bright red or yellow lets everyone know not to tamper with the machine's power until maintenance is completed. OSHA regulations call this 'lock-out'. You should become very familiar with the various means of lock-out and select the best ones for your particular bottling line.

Risk Management

Admittedly, Julio made a near-tragic decision when he reached into an operating labeler. But the employer has the responsibility for anticipating and preventing potential accidents. Take a closer look at the present machinery and maintenance procedures.

Next, identify the risks of your particular operation so that you and your supervisors can find the appropriate solutions. For instance, Julio's winery had not conducted periodic safety meetings or seminars for the employees for a long time. Whether it takes two minutes, or a half-hour or more, employees need to see management demonstrate interest in their safety.

With regard to a safe work environment, management must demonstrate involvement all the way up and down the line. Your supervisors perhaps are most important as they are the most visible to the line employees.

Effective risk management will not have credibility in the eyes of the employees without top management involvement. Ideas? Tour the plant with an inspection checklist and an employee. Rotate this person to allow everyone a chance to get a closer look at the safety you all seek. Have the work shifts compete for the best safety suggestions.

Fostering a positive attitude towards safety on the bottling line is good business. Employees know when they're important and when they're not. Recognition for work well-performed is their most important motivator—not, as you may think, money. Remember that praise is your most useful tool in risk management.

In essence, taking a closer look at your bottling line safety involves taking a closer look at your ability to visibly demonstrate your sincere concern for the welfare of your employees.

Employee Training

All employees are trained to perform the job functions at hand. But are they trained in other procedures? Evacuation? Power failures? Lock-out? When to shut it down and contact the supervisor? It is this area that contributed most to Julio's accident.

It was a management responsibility to design training for such problems. Do you want the employee to take action first, or shut down first? I think common sense, and Murphy's Law, must weigh heavily in your procedures and employee training.

When new employees are hired, give them a full orientation, have them work with a model employee, review safety policies (you do have them in writing, don't you?), and learn what to do when inevitable problems occur.

Training also should include new equipment training, refresher work for everyone, a review of company procedures mentioned here, and other areas such as electrical hazards, inspections, housekeeping, broken glass removal, material handling techniques and forklift safety.

Hazardous substances are also a (well-publicized) area of concern. By law, you are required to notify and train employees about health precautions to be taken when working with hazardous substances.

Specifically, bottling line employees need training in machine operation and guards, maintenance procedures, emergency shut-offs and other precautionary requirements such as eye protection for the foiler area and proper lifting techniques for casing bottles.

A Sonoma County winery initiated employee training in back safety due to a rash of claims on the bottling line. The problem area was the tail end of the line where cases are stacked onto pallets for shipping. Training included a film on back safety; demonstrations with actual boxes were conducted to show how to bend, lift, and, most important, how to twist with the load by moving the feet instead of the torso. The training included as many employees as possible in order to reinforce, through peer pressure, the desirable lifting techniques.

It takes an eagle eye to spot the danger areas in any operation. You can, and should, take a closer look yourself. You can also utilize the services of outside safety engineers, consultants, and specialists with your insurance carrier. You not only will save money in the long run, you will also find ways of preventing injuries to the people you need most in your operation—your own employees.

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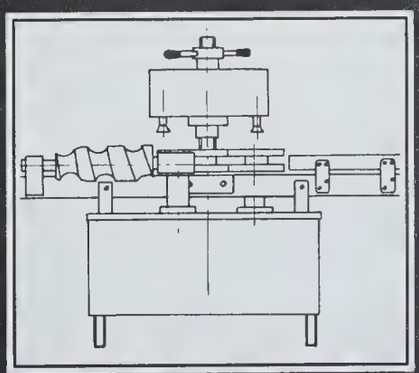
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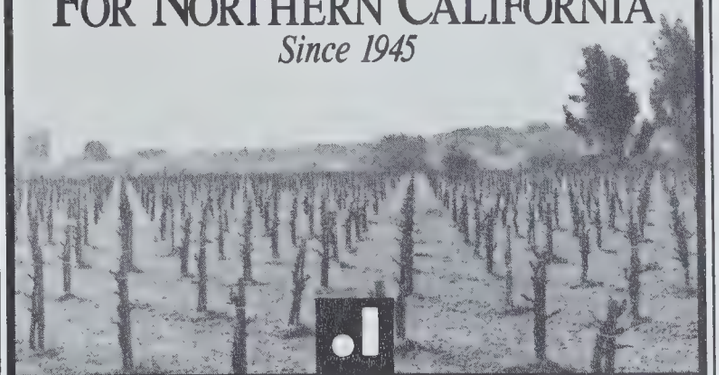
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Protein Fining Agents: Part III

Bruce Zoecklein, Enologist
Department of Horticulture
Virginia Polytechnic Institute & State University

As discussed in *PWV* (July/August 1987), gelatin preferentially binds with larger molecules; thus the agent has a more dramatic effect on color and tannin reduction in aged wines. Indeed, it is safe to say that young wines are more forgiving than aged wines in respect to the possibly detrimental effects of protein fining agents.

This is particularly true with gelatin. In terms of phenol absorption capacity, gelatin is usually similar to albumen. However, unlike albumen, it may remove too much fruit character from the wine.

Casein

Casein is the principal protein in milk (1 lb of milk contains 30 grams of casein and 10–15 grams of albumen). Casein exists as a positively charged macro-molecule with a molecular weight of 275,000.

Casein is available to the wine industry in several forms. Purified milk casein is insoluble in acid, but soluble in an alkali solution. Potassium caseinates are water soluble and mildly soluble in acidic or low pH solutions such as wine.

Most caseinates (casein salts) can simply be dissolved in water prior to use. Milk casein, on the other hand, must be hydrated in water with a pH greater than 8.0. Some proprietary compounds contain potassium bicarbonate, which enhances the water solubility of both casein and casein salts. Additionally, some proprietary caseins are mixtures of finely powdered casein and bicarbonate.

Milk casein is produced by acidifying fresh fluid skim milk. The precipitated casein is thoroughly washed and then dried and ground to a specific mesh size. The standard common mesh size is 30 mesh (Western Dairy Bulletin 1977). Pulverizing casein enhances its solubility.

Our *PWV* fining agent survey indicated that, of those using casein-type fining agents, 66% use potassium caseinate, 23% use milk casein and 10% use sodium caseinate.

Regardless of the particular casein or casein preparation employed, it should be hydrated in water–never juice or wine–and allowed to fully hydrate prior to use.

Upon addition of the casein slurry to wine, the relatively low wine pH causes the casein to flocculate, with the resulting precipitate absorbing and mechanically removing suspended material as it settles from solution.

Casein's principal application in white wines is for removal of color (or color precursors), oak character, and bitter compo-

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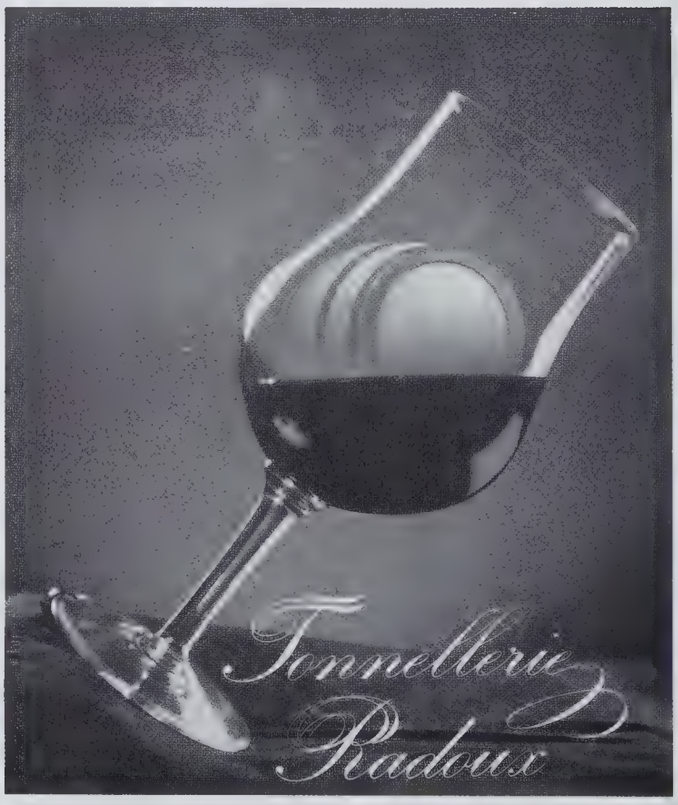

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nents. Occasionally, it may enhance clarification. The majority of those responding to our survey indicated they used casein for color removal and for modifying astringency and/or bitterness (see Table I in *PWV* July/August 1987). Like isinglass, casein can bring forward the fruit character.

Casein can bind with and precipitate browning precursors (Flavan-3, 4 diols), thus helping to prevent browning and pinking in susceptible wines such as Pinot Blanc. Casein is known to be a 'body stripper', due in part to its phenol absorption abilities.

Casein can be used as a substitute for carbon in de-coloring white wines. Although not as effective in color removal as carbons, caseins avoid the oxidative degradation often associated with carbons. Casein is frequently used for removal of dark color and cooked flavors from sherries.

Caseins are reported to remove as much as 45% of the copper and 60% of the ferric iron from must or wines (A.E.B. 1982). Only two of 88 winemakers in our PW survey used casein for removal of copper and/or iron.

As with gelatin, white wines fined with casein may benefit from a prior addition of a tannic acid or kieselsol. If tannic acid is used prior to casein addition, approximately ½ the expected casein weight is used.

Clarification with casein is not always the optimum choice. For this purpose, it should be used in a solution of at least 25 g/L concentration, prepared in water. This helps assure flocculation with finer flakes, thus giving better clarification.

Previous treatment of wine with tannin may aid casein fining in addition to fining at cellar temperatures (O'Neal et al. 1951). As with other fining agents, casein solutions must be mixed intermittently with the wine to assure the desired results.

Pure casein is often used in white wines in the range of 5–10 g/hL. Sometimes more is used, since wine acidity causes it to precipitate out of the wine (Watts et al. 1981).

Due to their phenol-binding abilities, protein fining agents such as casein can have a dramatic effect on: color, texture, body (front, middle and finish), astringency, bitterness, aroma, fruit, finish, ageing potential, stability, lees production, lees compaction and overall palatability.

In Part I (*PW* May/June 1987), the ability of different protein fining agents, including casein, to affect color, tannin removal, clarity, lees production, etc., was compared. It is essential that careful fining trials be performed and evaluated prior to use of these agents in the cellar.

Exactly the same lot of wine to be used in the cellar should be used in laboratory trials. To be effective, protein fining agents must be properly hydrated and of the highest purity.

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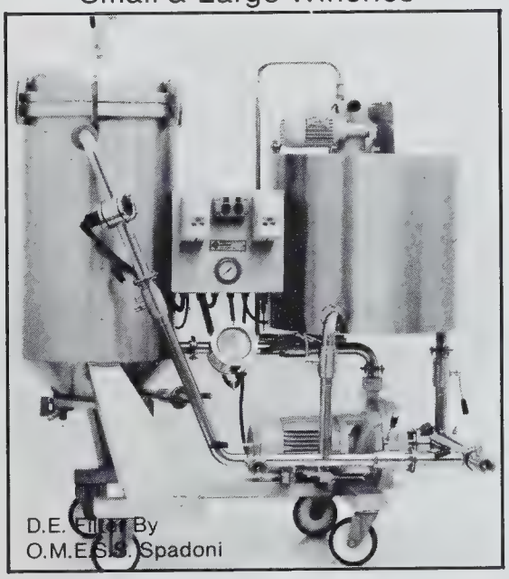

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California Society of CPAs 1987 Wine Industry Conference

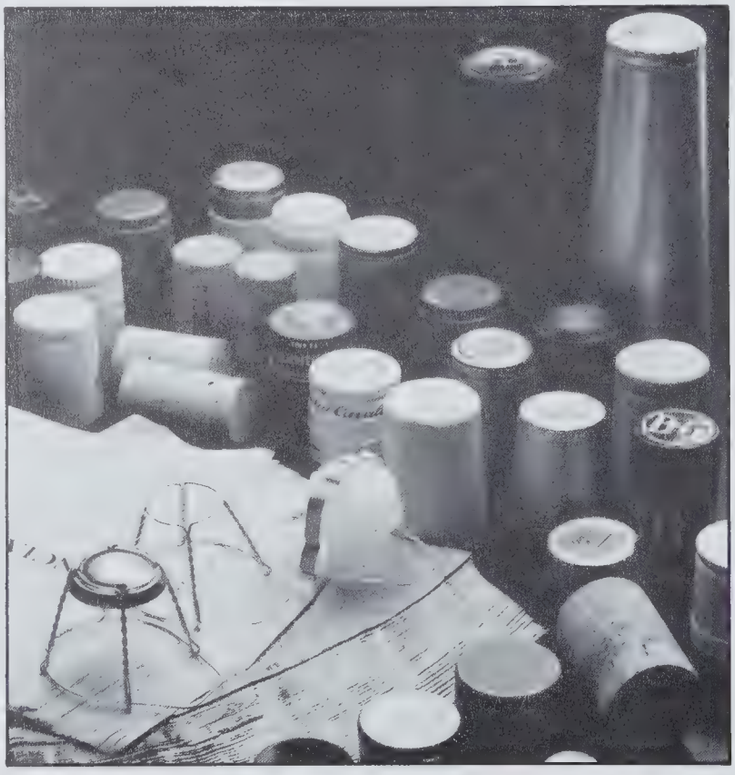
The California Society of CPAs, Education Division, offers in its 1987 Wine Industry Conference a comprehensive program addressing financing, taxation, accounting and marketing issues. These are of crucial importance to owners and managers of wineries and vineyards, and to accounting professionals who advise them.

The conference is from 8:30am to 5:00pm on Dec. 7, 1987 at the Clarion Inn, 3425 Solano Ave., Napa, CA. It will focus on the use of sophisticated business practices to ensure profitability in the wine industry's changing business climate. Twelve speakers will address a range of legal, accounting, financing and marketing topics.

The conference is open to all professionals involved in the wine industry. The fee for the event is $155, including lunch. For more information, contact the California Society of CPAs' Customer Service Dept., 275 Shoreline Dr., Redwood City, CA 94065, 415/594-9393.

The morning program includes: Industry overview–Michael Mondavi, Robert Mondavi Winery; Tax update–F. Richard Losey, Losey & Smith; Product cost accounting, financial accounting, & tax accounting–Gregg Scott, Price Waterhouse and Paul Ainslie, Odenberg, Ullakko, Nuranshi & Co.; Budgeting and forecasting–Mark Stornetta, Glen Ellen Winery; Product line Costing and product line profitability–Leo Plumley, Belvedere Winery.

After lunch, speakers will include: The newsletter impact–Nathan Chroman of Nathan Chroman law offices; Marketing war stories–Sam Sebastiani of Sam J. Sebastiani Wines; Multi-state taxes–Earl Thomas, Arthur Anderson & Co.; Raising capital doing deals–John Fischer, Hambrecht & Quist; Valuation issues–Alan Johnson, Johnson Hersey Corp.; When to get out–Bill Pauli, Pauli Ranches, Inc.



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Introduction to Sensory Evaluation of Wine / Sect#873E06 A beginner's class to improve the critical tasting ability of novice enophiles which includes a structured introduction to basic aspects of sensory evaluation. Participants will study different compounds of wine appearance, aroma, and flavor. Topics will include: origins of desirable and undesirable flavors in wine; sensory contributions of oak and bottle ageing; and correct use of wine terminology and scorecards. **Instructor:** John Buechsenstein, winemaker, McDowell Valley Vineyard, Hopland, CA. **Date:** Saturday & Sunday, 9am-4:30pm, Jan. 23-24. **Location:** Lounge, Faculty Club, Old Davis Road, UCD. **Fee:** $225 includes 2 lunches, pre-enroll by Jan. 15.

Canopy Assessment & Management / Sect #873E18 A review and update on current research in canopy management systems. To include canopy assessment techniques such as the New Zealand system developed by Dr. Richard Smart. There will be lectures on interaction of canopy management and grape composition and disease control. There will be a trellis system lecture and vineyard tour. **Coordinator:** Mark Kliewer, PhD, Dept. of Viticulture & Enology, UCD. **Date:** Friday, 9am-4pm, Jan. 29. **Location:** Clubroom II, Faculty Club, Old Davis Road, UCD. **Fee:** $90 includes lunch, pre-enroll by Jan. 22.

Computers in Winery Operations / Sect#873 E31 Eleven winery-experienced speakers will discuss their work with computers. There will be two hours of vendor demonstrations of commercial software packages for accounting and inventory control. Topics will include: Determining hardware needs; Computers in the cellar and fermentation modeling; Creating a bulk wine inventory system in-house; Bulk wine information: making better wine?; Tracking sales data; Accounting and sales projections; Apple computers in the vineyard; and cost allocation of bulk wine. **Coordinator:** Jim Lapsley, UC Extension. **Date:** Saturday, 9am-4:30pm, Jan. 30. **Location:** Lounge, Faculty Club, Old Davis Road, UCD. **Fee:** $70, pre-enroll by Jan. 22.

Spectrophotometers for Wine Analysis / Sect#873E30 In the last five years, the price of spectrophotometers has dropped

to the point that even small wineries should consider purchase for routine wine analysis including enzymatic assays, such as sugar or malic acid; for measuring protein and phenolic levels in wine, and wine color and oxidative browning. This lab class combines hands-on experience for each of the above tests with lectures to acquaint the winemaker with what a spectrophotometer is, how it works, how to create standard curves, and how to determine what is really necessary in a spectrophotometer for wine analysis. **Instructor:** John Zaya, Dept. of Viticulture & Enology, UCD. **Date:** Saturday, 9am-4pm, Feb. 6. **Location:** Room 1020, Wickson Hall, UCD. **Fee:** $100, pre-enroll by Jan. 29.

Establishing and Managing the Home Vineyard / Sect#873E08 Designed for people, especially serious home winemakers, who want to establish their own small vineyard for quality wine production. Topics to include: variety and site selection, annual growth cycle, land preparation, vineyard layout, mineral nutrition, erosion control, irrigation, pest control, and training and pruning. **Instructors:** Nancy Rosner and Eddy Szyjewicz, Devine viticultural consultants. **Date:** Saturday, 9am-4pm, Feb. 6. **Location:** Orchard Room, University Extension Center, Extension Center Drive (off Hutchison), UCD. **Fee:** $60, bring sack lunch, pre-enroll by Jan. 29.

Factors in Irrigation Scheduling for Wine Grapes / Sect#873E11 Designed for the technician, vineyard manager, and winemaker. Management of the grapevine's water needs has significant impact on vine physiology and the style and quality of the wines produced from the grapes. Forecasting and manipulation of the water regime with drip and other methods of irrigation throughout the growing season can be a powerful tool to the viticulturist. Two speakers and their topics are: Dr. Mark Mathews, UCD, Physiology of vine moisture stress; and Daniel Roberts, Sterling Vineyards, Importance of soil depth, texture, and grape variety in scheduling. Five experienced speakers will address methods of determining vine and soil moisture with: the neutron probe; the pressure chamber; gypsum blocks; infrared analyzers; and irrigation scheduling. **Coordinators:** Daniel Roberts, Sterling Vineyards, Richard Nagaoka, viticultural consultant. **Date:** Wednesday, 9am-4pm, Feb. 10. **Location:** Orchard Room, University Extension Center, Extension Center Drive (off Hutchison), UCD. **Fee:** $75 includes lunch, pre-enroll by Feb. 3.

Winery Financial Planning & Modeling Using a Computer / Sect#873E17 Instructor George Schofield, wine industry consultant, has developed a series of linked spreadsheets using LOTUS 1-2-3 to make a computer a useful tool for forecasting sales, income; accounting for cost of goods sold and operating expenses to create a projection of gross margin; and how to use that data to develop profit/loss statements, cashflow and funding needs. Copies of Schofield's spreadsheet templates will be available at nominal cost. **Date:** Friday, 9am-4pm, Feb. 19. **Location:** Clubroom II, Faculty Club, Old Davis Road, UCD. **Fee:** $100 includes, lunch, pre-enroll by Feb. 12.

Topics in Sparkling Wine Production / Sect #873E27 An advanced program for current methode champenoise producers. Sensory aspects and cuvee blending strategies will be discussed. Technical topics will include: Establishing a QC program; UV destruction of wine quality—tasting and lecture; Yeast for secondary fermentation: a review of yeast nutritional requirements and characteristics; Advances in yeast technology; Propagation techniques and strain variations—panel and tasting; Adjuvants—Product review and discussion of industry practices; Choosing adjuvants and amounts—panel and tasting; Descriptors for sparkling wine aroma; Base wines and blending strategies. **Coordinator:** Alan Tenscher, Schramsberg Vineyards. **Date:** Saturday, 9am-4:30pm, Feb. 20 and Sunday, 9-11:30am, Feb. 21. **Location:** Lounge, Faculty Club, Old Davis Road, UCD. **Fee:** $150 includes one lunch, pre-enroll by Feb. 12.

For further information and to enroll by telephone using your VISA or MasterCard call toll-free in California 800/752-0881. Davis and Dixon or out-of-state residents please call 916/752-0880.

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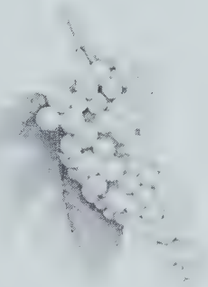

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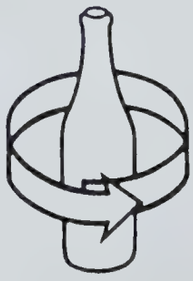

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Everyone with more than a cursory interest in grapegrowing, winemaking and wine marketing should be reading PRACTICAL WINERY/VINEYARD. 1987 back issues are available for $5.00 each, including postage. Please mail payment with your order.

This itinerary includes four distinctive wine regions of France. The tour will be led by Don Neel, publisher of **PRACTICAL WINERY/VINEYARD** and Raymonde Kaplan, an experienced tour leader who is a fluent speaker of French and English. Kaplan, born in France, taught French and English in California schools for 20 years and now resides in France.

The tour group is limited to 14 participants to offer maximum access to producers for in-depth interpretation of grapegrowing and winemaking as practiced in France. Vin-Tours, under the direction of Lynn Garric, prepared the itinerary, after conducting technical tours of the French wine industry since 1982.

After arrival in Paris, the tour begins with visits to two producers of white and sparkling wines in the Loire Valley. We will visit the Taransaud Cooperage in Cognac to observe barrel making firsthand.

Within the Bordeaux region, we will visit five producers. In the Medoc, there will be a cellar tour at Chateau Margaux followed by a vineyard and cellar tour at Chateau Giscours with a vertical tasting and dinner. Grapegrowing and winemaking will be discussed with the winemaker at Yquem in Sauterne, another in Graves and a visit to Chateau Tour des Combes, a producer of merlot in St. Emilion.

A visit to a producer of malbec will be an option along the route to Beaujolias where there will be a cellar tour and barrel tasting with an enologist at Domaine Deboeuf.

During two days in Burgundy, we will have a cellar tour and barrel tasting at Louis Jadot in the Cotes de Nuits. We will visit two Chardonnay producers and have a vineyard and cellar tour and/or a cooperage tour along with a tasting in Chambolle-Musigny.

The final region is Chablis to include a vineyard tour and tasting in the caves at Henri La Rouche. One full day is planned for sightseeing in Paris before the return flight home.

Cost of the tour package is $2,825 per person double occupancy; single supplement, an additional $250. This cost is based on economy class airfare and a minimum of 10 adult passengers. The price is calculated on airfare and exchange rates quoted on date of printing and is subject to change should air tariffs, fuel charges or the U.S. dollar exchange rate vary.

Included in the tour price is round-trip air fare San Francisco to Paris and twin-bedded rooms with private baths. Continental breakfast throughout and one full meal daily; 12 dinners and 2 lunches. Rental of cars and/or 9-passenger vans for all group transportation in France. Service of professional guide and full program of fieldtrips and sight-seeing as indicated in itinerary. All taxes on hotels, car rentals and air fares. Transfers and handling of baggage between San Francisco and France for one checked suitcase per person.

This tour is strictly limited to 14 participants. Reservations will be accepted upon receipt of $275 deposit per person by January 1, 1988. $1,275 is due by February 1 and $1,275 is due by April 1. Please mail check for $275 deposit per person payable to HMS Travel, 1057 College Avenue, Santa Rosa, CA 95404

Please write **PRACTICAL WINERY/VINEYARD** for more information contained in a detailed brochure or call Lynn Garric at Vin-Tours, 707/539-2078 or Loretta Slyh at HMS Travel, 707/526-2922. Please ask for references of winemakers and grapegrowers who have happily made this tour.

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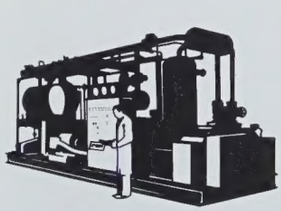

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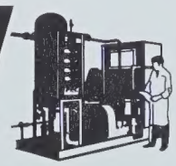

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Recover Fine Wines and Juices

Increase your wine production **ECONOMICALLY** by recovering your lees and juices! Pressure Filtration Specialists Wine Recovery Service can filter your juice, fermentation and fining lees into **PROFITABLE PRODUCTION!**

We can recover up to 87% from your lees with our mobile, self-contained micropore filtration units from 200 up to 10,000 gallons a day! Most filtered lees have less than 20 parts per million total suspended solids providing you with clear juice or wine for fermentation or aging! And we do this in a food grade, sterilized containment system!

No longer will you loose your fine varietal vintages or juices at the bottom of your tanks! Call or write to us for our descriptive color brochure and a consultation. We're here to help you produce more and finer wines!

YOU PAY ONLY FOR THE JUICE OR WINE RECOVERED AND ACCEPTED BY YOUR WINEMAKER!

Pressure Filtration Specialists, Inc.

Wine Recovery Services

PO Box 1040 Calistoga, California 94515-6040 phone: (707) 942-4431

Serving the fine wineries of Napa and Sonoma Valleys